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ORIGINAL COMMUNICATIONS.

THE MODERN SURGICAL TREATMENT OF NON-STRANGULATED INGUINAL HERNIA.

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Twenty-five years ago it is not improbable that many good surgeons would have expressed belief in the truth of Trelat's dictum that a non-strangulated inguinal hernia should be operated upon only when it could not be completely, constantly, and easily retained by a truss. A few, more or less familiar with the work of such pioneers as Czerny in Germany, Lucas-Championnière in France, Socin in Switzerland, Wood, Barker, Banks and Macewen in Great Britain, and Marcy and Greensville Dowell in America, were advocating and practicing operations for the cure of reducible hernia. Others, deeming it injudicious to interfere in such cases because of the uncertainty of the ultimate result and also no doubt because of a certain degree of immediate danger, confined their efforts to supplementing their operations for strangulated hernia by suturing the neck of the sac, with or without resecting its body, according to the exigencies of the case or their individual preference.

In 1888, at the Congress of Italian Surgeons, Bassini described a new method which he had been using for about four years. The following year he published his epoch-making monograph on the subject of radical cure.[1] His method embodied the best features of the more successful operations already in vogue, such as suppression of the hernial sac and its high ligation, the latter being a step upon which Lucas-Championnière had already correctly insisted, and in addition thereto introduced the principle of reconstructing the inguinal canal. This was accomplished chiefly by reforming the posterior wall and increasing the obliquity of the channel through which the spermatic cord passes. From December 23, 1884, to July 1, 1889, he had done his operation 262 times, and of this number it was done solely for the purpose of obtaining a radical cure 216 times. In this latter group there was no mortality and only one per cent of recurrences. Although some of the cases had not been of sufficiently long duration to be of much value, the result *in toto* was the best that had thus far been obtained in any series of cases equally as large.

It may be stated without hesitation that the general adoption of radical-cure operations is due to Bassini more than to any one else, and although other methods have been introduced from time to time, not one has met with such universal acceptance as his. The principles of his method are as anatomically and as surgically true to-day as they were when he enunciated them, and although the operation has been variously modified, the essentials of success were worked out by Bassini himself in a most careful and thorough manner.

Properly performed the operation for the radical cure of inguinal hernia is one of the ideal procedures of modern surgery. It is

[1] Un Metodo Nuovo per la Cura Radicale dell 'Ernia Inguinale, Padova, 1889.

practically devoid of danger, does not inflict suffering nor long convalescence upon the patient, and offers an excellent chance for permanent cure. Unfortunately it has been and still is done by some who possess neither the accurate anatomical knowledge nor the technical skill necessary for its successful performance. Hence recurrences have taken place, with the result that operator and patient alike have lost faith in the power of surgery to cure.

The prerequisites of a permanently curative operation are the isolation of the sac, its ligation and section at or above the level of the internal abdominal ring, narrowing of the superior hernial orifice, and reconstruction of the inguinal canal. An operation which fulfils these requirements, if done under strict asepsis, will probably cure the patient of his infirmity.

My method of preparation and technique of operation are as follows: On the evening of the second day before the operation the patient is given an ounce of castor oil, and on the morning of the next day receives a high enema of hot normal salt solution. Nothing but liquid foods are given for twenty-four hours before operation, and of these albumen water and beef extract are preferred. They may be taken *ad libitum*. Local preparation consists in shaving the suprapubic region, the groins, the inner aspect of the thighs and the perineum, and then washing these parts, as well as the entire abdomen and flanks, first with hot water and soap, then with alcohol, and finally with sterile water, after which the skin is dried with a sterile towel and a dry sterile gauze dressing is applied. Gauze is used for washing instead of a brush, as the latter, unless used with great care, may scratch the skin and thus favor infection of the wound. After the patient is anesthetized and on the operating table the dressing is removed and the skin painted with tincture of iodine.

An incision is carried the full length of the groin a finger's breadth above Poupart's ligament, extending from a point that distance above the spine of the os pubis to one the same distance above the anterior superior spine of the ilium. It divides skin and both layers of the superficial fascia together with the superficial blood-vessels between the latter. The blood-vessels are caught with hemostatic forceps and tied at once. This step is important, for although torsion of the small arteries would probably suffice to arrest hemorrhage, unless the veins are tied oozing may take place and cause a hematoma, which would predispose to infection and perhaps prevent primary union of the wound. This incision exposes the aponeurosis of the external oblique muscle, which is then split up upon a grooved director passed beneath it through the external abdominal ring. Care should be taken not to injure the ilio-inguinal nerve during this step of the operation, as well as during the next one. Each margin of the incised aponeurosis is now caught with Kocher forceps and dissected from the underlying tissues for a short distance. The lower flap thus formed must be dissected sufficiently free to give a good exposure of the shelving margin of Poupart's ligament. The inferior two-thirds of the inguinal canal is widely opened by this procedure, and lying in it will be found the spermatic cord and the hernial sac.

The next step is to cut through the cremasteric tissue which covers them both in order to get down upon the sac. If the tissue which presents in the canal be picked up gently with forceps and incised throughout its whole length by successive strokes of the knife, the sac will be brought into view. It can be opened, the hernial contents reduced, a finger inserted into it, and the plane of cleavage between it and the cord determined, after which it can usually be separated from the latter with comparative ease. Longitudinal incision of the cremasteric layer is most important, as by opening an envelope common to both cord and sac it saves the former from being torn and bruised during the separation of the one from the other. I believe that some of the bad results attributed to transplantation of the cord were due to injury inflicted while the sac was being isolated. The separation may be accomplished in some cases by a few cuts with the scissors, particularly when the hernia is a recent one;

in many cases it is best done by blunt dissection with a piece of dry gauze wound around the index-finger. Whether it be begun high up, as has often been recommended, or near the fundus, the sac must at least be freed at the level of the internal abdominal ring, and if possible even above it.

The outer third of the roof of the inguinal canal is formed by the internal oblique muscle; consequently the incision of the aponeurosis of the external oblique does not open the canal throughout its whole extent. This is true even of very large herniæ of many years' duration, as I have frequently demonstrated, not only at the operating table, but also in the dead-house, where it has been my privilege to dissect many herniæ upon the cadaver. From these considerations it becomes apparent that to cut off the sac at the lower margin of the internal oblique muscle, as is commonly done, is to remove it in an incomplete manner, leaving an infundibulum which will certainly favor recurrence of the hernia.

To obviate such a defect in the operation it is only necessary to loosen the internal oblique, and with it probably some fibers of the transversalis, place a retractor beneath it, and while the assistant draws the muscle away, to carry the dissection of the sac clear up to the parietal peritoneum. It has been found that circular division of the tissues around the neck of the sac facilitates this dissection, particularly in the case of old herniæ. When this high dissection has been completed traction is made on the sac, it is transfixed flush with the parietal peritoneum, doubly ligated, and cut off (Fig. 1).

If the intestines come down close to the orifice while the sac is being ligated, the assistant should push them back with a piece of gauze held in a long forceps, withdrawing it just as the second portion is being tied off. This maneuver will keep the intestine from being caught in the ligature. If there is any bulging of the stump of the sac or the contiguous parietal peritoneum, both ends of the catgut with which the sac has been ligated are threaded on a curved needle and passed from within outward through the transversalis and internal oblique muscles, tied together, and cut short. This procedure draws the stump well up and does away with any bulging. I am convinced of its utility and am using it more and more (Fig. 2).

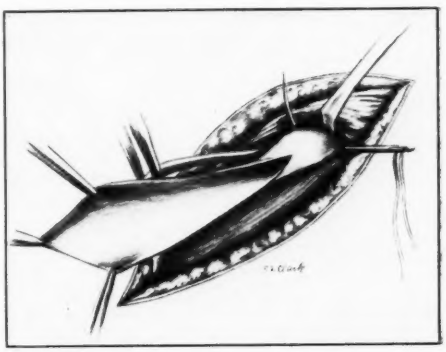

FIG. 1.—The sac has been opened, its contents reduced, and separation from the spermatic cord effected. Observe how the internal oblique muscle is being drawn back and the sac pulled down so that it can be ligated high up, close to the parietal peritoneum.

It is now time to reconstruct the inguinal canal, which is done by sewing the shelving margin of Poupart's ligament to the lower border of the internal oblique and transversalis muscles. It is usually stated that the margin of the ligament is sutured to the conjoined tendon. If such were the actual extent of the union of structures the procedure would be a very faulty one. As I have shown elsewhere,[1] and as J. A. Blake,

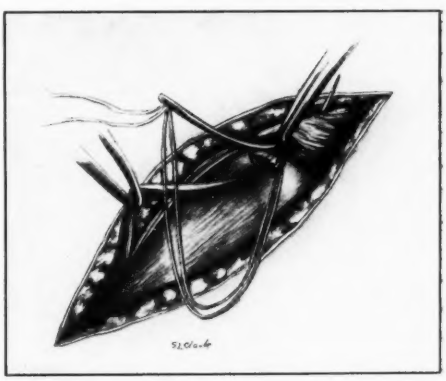

FIG. 2.—The stump of the sac is about to be drawn through the abdominal muscle.

[1]Inguinal Hernia, by Wm. L. Rodman, M.D., LL.D., and Charles W. Bonney, A.B., M.D., *American Journal of the Medical Sciences*, December, 1909, and February, 1910.

of New York, has also demonstrated, the conjoined tendon is not a well-developed structure in the average subject. Moreover, when well developed it does not extend the whole length of the canal. As a matter of fact, in order to make a good new floor for the canal, it is necessary to pass the needle through the substance of the muscles themselves, and to make the two internal sutures include the outer margin of the rectus muscle as Bassini himself originally did and so stated in his own description of the operation. I have known the margin of the rectus to be pointed out for the conjoined tendon more than once in cases in which the latter was a very rudimentary structure. The suturing should also be carried external to the internal ring, so that the muscles above are firmly united to Poupart's ligament below well out toward its attachment to the anterior superior spine of the ilium. This not only narrows the hernial orifice from above, but strengthens the abdominal wall external to it. A. H. Ferguson, of Chicago, has called attention to the fact that recurrence may take place external to the internal ring, and believes it due to faulty development of those portions of the internal oblique and transversalis muscles which arise from Poupart's ligament. At all events it is well to place at least two sutures beyond the internal ring. Kangaroo tendon is used for these sutures. While they are being placed the cord is held aside with a loop of gauze and is deposited upon the new floor after the last suture has been tied (Fig. 3).

Many surgeons no longer transplant the cord. I always do so except in children and in adults who have a retained testicle associated with the hernia. It seems to me that the internal ring can be both narrowed and elevated more satisfactorily, the obliquity of the canal better increased, and the new floor more strongly formed if the cord be transplanted. While not denying that good results may be obtained without transplantation of the cord, I think it remains to be determined whether they will be equally as satisfactory as those which have been secured in the large number of cases in which transplantation has been practiced.

The roof of the inguinal canal is reformed by uniting the divided aponeurosis of the external oblique muscle with a continuous catgut suture. If considered necessary the flaps may be overlapped, and the superficial fascia, which consists of two layers in the groin, may also be brought together with a continuous suture of fine

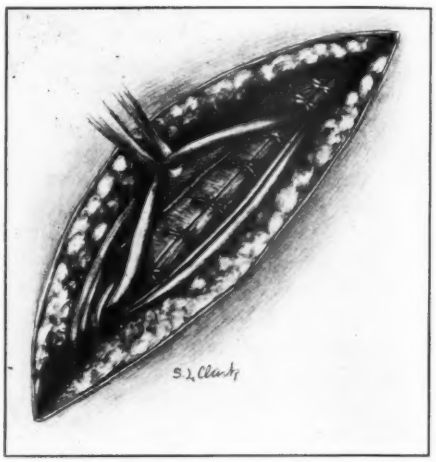

FIG. 3.—The lower margin of the internal oblique muscle, together with some of the transversalis, has been sutured to the shelving margin of Poupart's ligament. The spermatic cord will be placed upon the floor thus made.

plain catgut before the skin is closed with a series of interrupted silkworm-gut sutures. When the abdominal muscles are lax overlapping is invariably practiced.

After the incision is closed the skin is washed with sterile water or weak alcohol, the line of suture touched with tincture of iodine, a strip of sterile gauze several layers thick fastened over it with narrow pieces of sterile adhesive plaster, and a gauze dressing put on and retained by a spica bandage. Neither sand-bags nor any other retentive apparatus are used, and after the patient has fully recovered from the ether he is turned on his side. The skin sutures are removed on the ninth or tenth day, the patient allowed to sit up in a chair on the fifteenth day, and to leave the hospital on the twenty-first day. It is not considered necessary for the patient to wear an abdominal supporter, but he is allowed to wear a gauze or light flannel bandage for three or four weeks after he gets up and about.

In the average case the procedure above described can be done without difficulty and fulfils all the requirements imposed by the altered condition of the structures involved. In certain herniæ, however, there are conditions which require further consideration. Thus, when the inguinal canal is very much dilated and the oblique muscles of the abdominal wall attenuated, it is advisable to take a reef in the transversalis fascia forming the floor of the canal by putting in a row of Lembert sutures with very fine chromicized catgut; and also to transplant the anterior layer of the sheath of the rectus muscle, which is dissected free, turned down, and sutured to Poupart's ligament after the latter has been united to the internal oblique muscle (Figs. 4 and 5). When dealing with the rare direct hernia, in which the neck of the sac is wider and less defined, these two measures may always be deemed advantageous. It is also well to

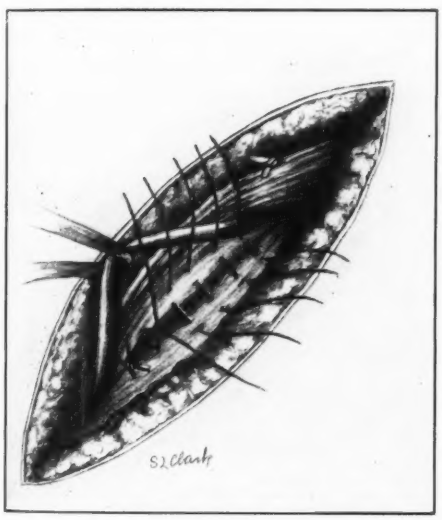

FIG. 4.—Showing a row of Lembert sutures placed in the transversalis fascia for the purpose of narrowing the floor of the inguinal canal.

suture the peritoneum. Direct hernia, however, will not often be encountered. Recent investigations have shown it to be less common than it was formerly thought to be.

Transplantation of the substance of the rectus is generally not employed, but occasionally something may perhaps be gained by transplanting it. In operating upon a large congenital hernia in an adult whose inguinal canal was much widened, I once cut deeply into the muscle and turned down a thick flap to fill in the lower and inner part of the canal, which seemed to be insufficiently closed by the usual procedure. The immediate result was apparently satis-

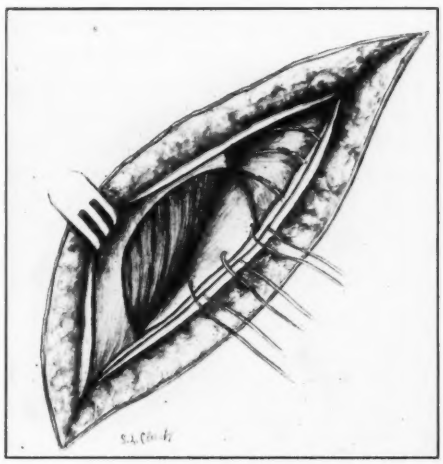

FIG. 5.—Transplantation of the sheath of the rectus muscle. (Rodman and Bonney.)

factory, a strong thick floor being formed after the suturing was done. The ultimate result of the operation was entirely successful, the patient showing no signs of recurrence after more than three years. Although transplanted muscle probably atrophies, its residue may lend additional strength to the weak area upon which it is superimposed. In these cases, too, it is well to overlap the aponeurosis of the external oblique, as mentioned above (Fig. 6).

The hope that wire netting might afford a permanent, non-irritating mechanical support to the weakened area in the abdominal wall has not been realized. It is affected by the fluids of the tissues, becomes eroded, and sometimes gives way. The free ends, although embedded in scar-tissue, might injure important structures. Sinuses are also sometimes caused by it. Recent investigations made by Riem, one of Körte's assistants, show that the netting often becomes displaced. He had *x*-ray pictures taken in several cases, with the result that displacement of the netting was clearly demonstrated. Finally, it may be stated that the presence of a foreign body in the

tissues would be very likely to cause discomfort even though it wrought no harm.

In congenital scrotal herniæ a tunica vaginalis may be made out of the sac. There is nothing new about this procedure, as Bassini did it in some of his early cases.

Adhesions between intestine or omentum and the hernial sac require different treatment in different cases. Concerning the former it may be stated that when they are of recent origin a careful dissection will render complete separation possible. When older and firmer, however, it will be better,

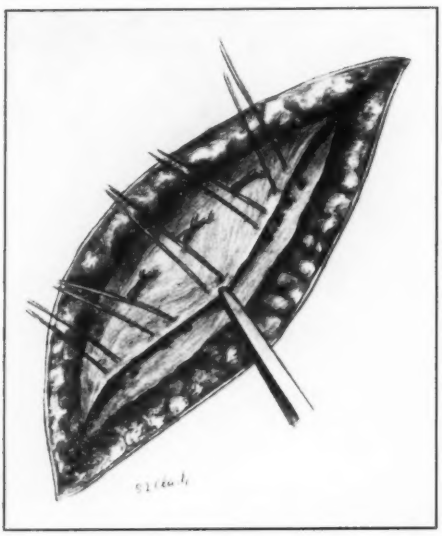

FIG. 6.—Overlapping of the aponeurosis of the external oblique muscle. (Rodman and Bonney.)

as a rule, to cut away the non-adherent portion of the sac and leave the remainder fastened to the gut, provided, of course, that such a procedure does not interfere with the high ligation of the former or prevent suturing of the peritoneum at the hernial orifice if high ligation is difficult.

It frequently happens that the intestine is easily reducible, but that the omentum is firmly adherent to the sac. Under these circumstances some omentum should be drawn down from the abdomen, a series of ligatures placed between the free and adherent portions, and a division of the two made with scissors below the ligatures. The adherent portion is then removed simultaneously with the sac. This procedure is simple enough except in cases in which the omentum is firmly united with the sac at or above the level of the hernial orifice. In any case, however, it is necessary to get between the free and adherent portions of this structure and to destroy all connection between it and the peritoneum at and above the hernial orifice. In some such cases a delicate and prolonged dissection is required before this can be accomplished. The omentum should always be tied off in sections, never *en masse*, as it is important to secure perfect hemostasis when dealing with a structure so vascular.

When operating for inguinal hernia associated with retained testicle the question arises as to whether the latter should be removed or whether an attempt should be made to bring it down into the scrotum. Formerly it was the rule to sacrifice it, but opinion has changed during the last few years, so that at present the best operators are rarely obliged to take it out. This change in practice has been brought about by the introduction of better methods of dealing with a retained testicle. My belief is that no fixed rule can be used in the treatment of this complication. If one thinks that the chances of permanent cure will be jeopardized in a given case by leaving the gland, then it seems good surgical judgment to remove it. A few cases in which I might have taken out the testicle had the patients not expressed objection to having it removed, have proved entirely satisfactory as far as cure of the hernia is concerned, although in some of them it was not possible to bring the organ well down into the scrotum. Ordinarily Bevan's operation will render a satisfactory transplantation possible. I am averse, however, to dividing the spermatic artery in this operation.

The question of castration has also to be considered when operating upon voluminous herniæ in the more elderly patients, whose muscles are flabby and much relaxed and in whom the two abdominal rings are closely approximated. In exceptional cases it may be deemed advisable to divide the cord at the level of the parietal peritoneum and then entirely obliterate the inguinal canal. Such a measure, however, will not

often be required, for the reason that patients whose local condition is such as to demand it frequently present other conditions which contraindicate surgical intervention.

Perhaps the most difficult cases from the technical point of view are those in which the injection method has previously been used. The usual relations of the structures are destroyed and much dissection is necessary to establish the landmarks. This is particularly true after paraffin has been injected. Cases operated on for recurrence are also more difficult than those for which primary operation is done, as scar tissue is present as well as change of structure and relation. In both instances, however, careful work will generally make a satisfactory completion of the operation possible.

In closing it may be stated that in adults the only treatment worth considering is operation, which, as has already been stated, will in all probability result in cure if properly done.

Under contraindications to the operation may be included all constitutional diseases which would lead the surgeon to refuse to do another operation except for the relief of a condition threatening life. Enteroceles which have lost the right of domicile are also better left untouched by the scalpel, for the reason that their reduction will probably require intestinal resection, which of course greatly adds to the danger of the operation. Patients above sixty are not good subjects for radical cure operations. Those under forty-five are the best ones. There is a constantly increasing tendency to operate upon young children, so that some good surgeons are now doing radical cure operations upon infants. The practicability of maintaining asepsis or even cleanliness in such patients is very difficult, and I believe it better to wait until the child is old enough to make these desiderata more easy of accomplishment. A certain percentage of herniæ in babies and young children will heal spontaneously. It is my belief, however, that children more than four years old should be operated upon.

In his earliest cases Bassini, who traced his patients carefully, had only about one per cent of recurrences. Improvements in aseptic methods and operative technique have given even greater assurance of permanent cure than could be held out a few years ago, so that at present the operation is truly one of the most satisfactory of modern surgery.

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HYPODERMIC USE OF MERCURY IN THE TREATMENT OF SYPHILIS.[1]

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As a method in the treatment of syphilis, the hypodermic injections of mercury are applicable in all stages. The indication for their use is one of great moment, and before using this method on a patient the physician should first thoroughly study his case. It would hardly be fair to discuss the hypodermic use of mercury in the treatment of syphilis without touching on the internal and the inunction methods of administering the same drug. In doing so I believe that I will be able to show why certain cases do better when this form of treatment is carried out.

First, I will discuss the internal administration of mercury. The ingestion method is one of the oldest and most generally used by the profession to-day. The popular form of mercury given internally by the practitioner is the protiodide pill, hydrargyrum iodidum flavum. This drug is given in one-eighth-grain doses three times a day, and the same amount is increased every other day until a tolerance to the drug is obtained. Then the tonic dose of the drug is prescribed by reducing the amount one-half, which is the quantity of mercury that the patient is to continue with during the whole course of treatment. When the tonic dose is decided upon, a lapse of about a week should intervene before the course of

[1]Read before the Worcester District Medical Society.

treatment is started. This will allow the system time enough to recover itself from the effects of the overdose.

What are the results and the objections to this form of treatment? Generally the average patient will do fairly well when closely watched by the physician, and the administration of mercury governed accordingly. No matter what amount of mercury is used by the ingestion method, there is sooner or later going to be a stomatitis or a gastrointestinal irritation arise. When the system is overburdened with the spirochætæ, and we have to depend upon the internal administration of mercury alone, I fear that its slow action on the syphilitic manifestations would be very discouraging to the patient.

On the other hand, should we push the drug to its full effect so as to control the symptoms, what are the results? As a rule the gums will become inflamed and gastrointestinal symptoms develop long before any material improvement has occurred. This I have found true among patients who have been using mercury from one to six months. Generally, by close inspection of these patients, one will be able to see mucous patches, secondary rashes, sore throat, and other signs that are secondary of this disease. This shows that the drug has been pushed to its full effect, but still the secondary symptoms remain. Should this form of treatment be stopped and the patient be placed on the injection method, or mercury by inunction, you will find in three to five weeks that all lesions will disappear and the patient will apparently be restored to health.

Treatment that will allow symptoms to develop (barring malignant syphilis) should not be depended on by the profession. Of course, I will agree that some cases do well under the internal treatment. Especially have I seen old tertiary lesions, where no great amount of destruction was going on, do well when mercury was given by the mouth combined with the iodides, known as mixed treatment.

Inunction Treatment with Mercury.—It was known that inunctions were used by the Chinese five thousand years ago. Darby tells us from a work written by him in 1863 that he collected from a manuscript which escaped the holocaust commanded by the Emperor Tsin Chi Homange, in the year 2367 B. C., material to show that the Chinese treated syphilis by mercurial inunctions, and also recognized scabies and treated it with sulphur. When such a treatment has been carried out for so long a time there is no question as to its value in treating and controlling violent outbreaks of syphilis which do not yield to the mouth treatment.

Very good results are obtained by this form of treatment, but its application is associated with so many objections that I believe many physicians find it hard for the patient to use this method.

The advantage of using the inunction treatment is, first, that it is not dangerous, and is free from all pain. The stomach is not upset and is left free for other medications. If the drug is absorbed it will quickly control all symptoms without affecting the gums and causing gastroenteritis. Of course, the physician should watch the effects of the drug carefully, for if a stomatitis develops it is more severe than if caused by the internal administration of the same drug. A disadvantage that is of some importance is that if the patient is not living under suitable conditions, he will not be able to keep the treatment a secret. Should he be married or living with his family it is practically impossible to administer this treatment without detection.

In one way it may be called a filthy treatment, especially when one is not clean in the protection of the skin. Uncleanly skins produce a dermatitis. Most every patient's objections against inunctions are that if an ointment is used over different parts of the body every night, and the same suit of underwear is put on each night, then it must produce an uneasy feeling in one that is clean. In some patients we find that they are not capable of applying the ointment in the proper way. Of course, in a case like this, if possible, it would be better for the patient to hire a trained rubber or masseur such as we find at different thermal resorts.

While I am convinced that the inunction treatment in controlling syphilis is one of the best of the old methods that we have at the present day, I can say that some few cases have come under my observation in which this form of treatment had no effect upon the disease. The fault was not in the giving of the mercury, but was due to the idiosyncrasy which the patient had toward the drug. If you will carefully watch you will find certain cases which on account of the peculiar construction of the skin do not absorb mercury, or if they do, it is in so small an amount that it does them very little good; while on the other hand mercury given by the mouth may pass through the intestinal canal and not any of it be absorbed. The only result in such a case would be simply a gastrointestinal irritation.

The Injection of Mercury.—The injection treatment is said to be more popular in Europe than in America. This is thought to be due to the writings of certain men in this country who have objected to this method without giving it a fair trial.

In the administration of mercury hypodermically, one must be careful of his technique and adhere strictly to antisepsis. If this rule is followed I believe that very little damage is done. When the syringe is plunged into the tissue it must be detached for about one minute, to be sure that no blood comes from a vessel. My best results have been obtained with the bichloride of mercury. This I have used in one-eighth-grain doses of the drug, and even higher if necessary. One should be sure that the bichloride solution is fresh before using it. An injection is given each day subcutaneously along both sides of the spine, starting just below the lower angle of the scapula and running them to the lumbar vertebra. The number of injections are gauged according to each individual case. Abscesses rarely follow when the technique is thorough. If the insoluble salts are to be used they should be given each day to effect. When suitable cases present themselves, or for any reason injections cannot be given each day, then the insoluble salt should be used. These are generally given intramuscularly and in the gluteal region.

The advantage of the use of mercury in the treatment of syphilis hypodermically is, first, that it assures a more accurate dose, and the absorption is more certain. The physician is sure that his patient is getting regular treatment, and knowing that hypodermic injections are being used a very close watch will be kept of all symptoms. While this method is being carried out the gastrointestinal system is at rest, and the toxic symptoms are not so liable to arise, especially stomatitis. On the other hand, the therapeutic and physiologic effect of the drug is more active when given hypodermically. In old tertiary cases, especially where there is gumma formation and rapid destruction of tissue, I have carried the patient along with good results by the hypodermic use of mercury, discontinuing all forms of the iodides. Thus I have saved the patient's stomach for feeding and such drugs as would be suitable in building up his physical condition. While the iodides do good when given in conjunction with mercury in tertiary cases, I have come to discontinue their use more each day. I believe that mercury is the drug of most importance in the treatment of syphilis, and more attention should be paid to its use than the other drugs that have been recommended to us. As the general health of most syphilitic patients is generally below the normal standard, one can easily see that when irritating drugs are given the stomach will soon rebel. From my experience I have gradually dispensed with iodides, not entirely, but to a great extent. In doing so I find that the results that I get in keeping the stomach in good condition for the digestion of food are much better than the results obtained by the giving of iodides.

A number of doctors have denounced the hypodermic injections, stating that the absorption is uncertain. On the other hand, can one say how much is absorbed when the drug is given internally or by the inunction method?

I have used the hypodermic method in the administration of mercury in a series of one hundred cases while in the genitourinary service at the Jefferson Hospital in Philadelphia, and in the clinic and the out-

patient genito-urinary department of the Worcester City Hospital, and also in my private practice.

The injections that I have used have consisted of the soluble and the insoluble form of mercury. In about ninety per cent of the cases I have employed the soluble form of the drug, while the other ten per cent received the insoluble salt of mercury. For the soluble form I have preferred the bichloride of mercury, and I consider it superior to them all. The cases that were selected for its use were patients that could come each day for treatment. I used a one-per-cent solution of the bichloride of mercury to which was added sodium chloride. Of this formula, from fifteen to thirty drops were injected daily as described in the first part of my paper. These injections were used until the patient showed the full effect of the drug. I will acknowledge that more or less pain follows such injection, but I can say that so far I have failed to see a case that would not consent to this treatment. I find that when the injection was given, if the fluid was deposited into the tissue very slowly less pain was produced than if one should thrust the piston of the hypodermic syringe down quickly.

From my experience I find that the first few injections are the most painful; those that follow do not seem to cause the patient so much trouble. On the other hand, the results are so pleasing that the patient is willing to suffer a certain amount of pain to get the desired effects. The cases that are having the soluble form of mercury injected are constantly under observation, thereby giving the physician chance to study the case and note each day the results of the absorption of the mercury. Therefore, this gives us a very good idea of how much mercury is being absorbed during the course of treatment.

The insoluble form of mercury was used on cases that were only able to see me once in every four or six days. This form of mercury has the advantage of more persistent effects, and the injections are only needed at longer intervals. In about ten per cent of the above cases I have used a thirty-per-cent gray oil, of which 1 Cc. was injected into the deep muscles. These injections were given hypodermically once in every four to six days.[1]

The part selected for the injections was the buttocks, and an injection was made in this part of the body once a week. More care should be exercised in the manner of giving this injection than when the soluble form is used.

The technique to be carried out when the gray oil preparation is injected is very important, and this is true of any oily substance that is given hypodermically. In giving the injections we must first have a needle that is long enough to insert the oil well into the muscles, and the barrel of the needle must be large enough to carry the oil into the muscular tissue; secondly, great surgical cleanliness must be carried out in giving these injections. When the needle is in position the oil is deposited into the muscular tissue very gently. By so doing I believe there is not so much pain. After the needle is in place it should be allowed to rest in the tissue for fully twenty or thirty seconds before it is withdrawn. This guards against the mercury oozing from the end of the needle and following the line of puncture. In withdrawing the needle too soon there is likely to be a thin column of mercury follow the needle into the subcutaneous tissue. If mercury should be deposited immediately beneath the skin it is liable to form a very painful and sore nodule that may terminate in a superficial abscess. When this treatment is being used a careful watch should be made of the gums, so as to guard against any toxic symptom that may arise. If any symptoms appear the drug should be stopped immediately.

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[1] I wish to state that at the present time I have discarded the use of the gray oil solution. The pain that was produced was so great that the patients objected to its use.

In place of the gray oil I am now using a formula that Dr. Eugene Carson Hay, of Hot Springs, Arkansas, was so kind as to submit to me. This contains bi-distilled dental mercury, lanolin, creosote, and liquid albolene, so prepared that it makes about a 50-per-cent solution. Of this preparation from one to three minims is injected intramuscularly once or twice a week.

I have now used this preparation in about twenty cases, and I have been well pleased with the results obtained to date. The fact that there is no pain on injecting this preparation, or if there is it is so slight that it does not bother the patient, makes it a very gratifying way of administering mercury hypodermically.

When these toxic symptoms start one must remember that there is more or less mercury in the tissues, and that there is going to be a gradual absorption which will result in a severe stomatitis. Should a stomatitis start and be so severe that the life of the patient is endangered, the physician should have a chart on which each injection is marked. Over these landmarks an incision can be made, and each place where the mercury has been deposited is drained. Generally such cases only arise in patients who have not been carefully watched by the physician and guarded against such unfortunate accidents. In the hands of such men I believe that the hypodermic use of mercury in the treatment of syphilis is dangerous. It also may be said that any form of mercury is dangerous no matter what way it is administered, if the physician is not a competent man and one who is not willing to carefully watch his patient.

SUMMARY.

In summing up I would say that we have three recognized methods in the administering of mercury in the treatment of syphilis, namely, the ingestion, inunction, and hypodermic methods.

The inunction method is not so popular at the present time as it has been in the past; it is a dirty, inconvenient, and unreliable way of administering mercury. I believe it is impossible to determine the exact amount of the drug that is absorbed by the skin when this method is used. It is more apt to cause a stomatitis, which at times is very discouraging to the patient.

Ingestion, or administration of the drug by the mouth, has I believe more disadvantages than any of the other means of giving mercury. When pills are given they frequently pass through the digestive tract without being dissolved or very little of the drug is absorbed. If the drug is given in the form of liquids I believe that there is a congestion started along the gastric and intestinal mucous membranes which undoubtedly hinders the absorption of the mercury. This method is not safe in severe specific cases in which the symptoms are alarming, and in which the energetic and rapid therapeutic effects are desired, because, as I have stated before, there is such a gastro-intestinal irritation established that it is impossible for complete absorption to take place.

The hypodermic method, which is not a new means of administering mercury, has been in use for a number of years. Its progress has been retarded and stimulated at different times. With the modern methods of sterilization it has been proven that there is no danger in introducing sterilized solutions into the tissues by means of a thoroughly sterilized hypodermic syringe, and this method has grown to be one of the most popular ways of treating syphilis.

Hypodermic injections have no effect on the stomach, and thereby leave the gastric organ free to digest food readily. The drug is rapid in action, and the dose is known to be accurate, effective, and harmless. The rapid action which is desirable in serious cases, in which life and death is a great factor, places this method of treating syphilis in a class of its own. The fact that this method of mercurializing the patient can be used at the very beginning or at any stage of the disease, thereby lessening the severity of the symptoms, and rendering the spirochæta pallida less active in a very short period of time without causing any toxic or disagreeable effects, should brand this method as one of the most important in the treatment of syphilis.

Case 1.—J. F. A., male, single, aged thirty years; occupation, inspector. Seven days after exposure the patient contracted gonorrhea. Seven days from the date of the appearance of the urethral discharge a sore appeared on the margin of the prepuce, and lasted from five to six weeks. At the end of the sixth or seventh week an eruption appeared on the chest, back, and arms. On examination by a physician in New York City the case was pronounced one of syphilitic infection. At the appearance of the secondary manifestations, which excluded every doubt or suspicion of the nature of the disease, the patient was placed on a continuous treatment. For one year he remained on this form of treatment.

At the end of this time he was obliged to go to the Philippine Islands, where his work brought him. During his stay in the islands he discontinued his treatment for one year.

Two years after the appearance of the primary sore the patient returned to New York, with one testicle twice the normal size. On consulting a physician it was pronounced a gumma. Treatment was started, and the patient was placed on the internal administration and the inunction form of mercury. After a suitable length of time no results followed and the patient returned to his home. He placed himself under the care of a physician, and the same line of treatment was carried out, but with no results. On the contrary, the testicle kept slowly increasing in size. After this treatment was carried out for a suitable length of time the patient was advised to have an operation, as a malignant disease was feared.

The testicle was three times the normal size, causing discomfort in dressing. It was hard in consistency, and less sensitive to pressure than the normal testis. An effusion could be felt in the tunica vaginalis testis which resembled an ordinary small hydrocele. On pressure there was absence of pain, and the epididymis was enlarged and hard. A beginning hydrocele could be felt along the cord. There was a general glandular enlargement, with no other signs of a syphilitic manifestation presenting itself.

The patient was given one-third of a grain of the bichloride of mercury hypodermically for six doses. At the end of these injections the testicle and the epididymis were reduced two-thirds in size. The beginning hydrocele of the cord and the tunica vaginalis testis had disappeared. The patient improved rapidly in health and grew stronger and more active. The glandular swelling entirely disappeared. From this time the patient was kept on a continuous treatment for two years. At the end of this time I advised a prescription to be used which contained mercury and the iodides, known as the mixed treatment. This was to be used four to five weeks in the spring and fall. During the past two years the patient has gained thirty pounds, and at the present time is heavier than at any period in his life.

Case 2.—C. P. D., aged thirty-four years; occupation, collector. Patient states that eleven years ago, ten days after intercourse, a sore appeared on the prepuce and lasted for three weeks. The following six weeks from the time of the appearance of the primary sore a red eruption broke out on the chest. He visited a physician, and the eruption rapidly disappeared when the patient was placed on continuous treatment of mercury. At the end of one year the physician pronounced the patient cured. He was told if he wanted to marry he could do so without bad results following. On the advice of the physician the patient was married.

Patient has been married for ten years, and states that no syphilitic symptoms have appeared until six weeks ago. Wife gives a history of two miscarriages. Twelve months ago the mother gave birth to a male child, who at the present time has a perionychia of the index-finger of the left hand. On examination of the mother I was unable to find any syphilitic symptoms. Father states that four months ago he noticed a small round mass the size of an olive on the outer surface of the left shoulder. This enlarged to about the size of a silver dollar. Six weeks ago it broke down and formed a sore. From this time on the patient has been using an ointment and taking a liquid medicine which was prescribed for him by a physician.

On the outer surface of the left arm, about on a level with the head of the humerus, is an undermined sloughing ulcer, which on pressure causes no pain. Surrounding the sore is a zone of red discoloration. Beyond the discoloration are a number of pustules, which are due to the different ointments that he has been using. No other symptoms are present.

The patient was started on the hypodermic injection of one-fifth of a grain of the bichloride of mercury every day for ten injections. At the end of the tenth injection the ulcer had entirely closed in. The

pustular eczema was still present but was gradually disappearing. Patient was then placed on the mixed treatment, and when last seen was doing well.

Case 3.—A. L., aged sixteen years; occupation, wireworker. Family history negative. Gonorrhea one year ago; exposure three months ago. Three weeks after the patient noticed a sore on the head of the penis; also there were a number of small sores on the prepuce. About six weeks after the primary sore had appeared an eruption broke out on the chest, back, arms, legs, and forehead. During the first two weeks the patient stated that he suffered from headaches, neuralgia, and rheumatoid pains. The patient has been under treatment for two months, the inunctions and the internal treatment being used.

Patient thin and septic looking. On the back, chest, arms, legs, and along the hair line of the forehead are a large number of flat papules, which are copper-colored and about the size of a penny. These are sharply circumscribed, elevated, and show a branny scaling. On the palms and the soles of the feet there is a papular-squamous eruption, with a diffused exfoliation of epithelial scales. On the tonsils, uvula, soft palate, lips, sides of the tongue, and the buccal membranes there are a large number of mucous patches. On the back and chest are two distinct blotches that are deep brown in color and of the size of a hand. Their color is unaffected by pressure and they are level with the surface of the skin. No signs of exfoliation can be seen. The hair pulls out very readily and the head presents a dry, moth-eaten appearance. Surrounding the rectum are a number of flat papules, showing the presence of condylomata. There is also a general glandular enlargement.

The patient was placed on hypodermic injections of the bichloride of mercury. Twenty drops of a one-per-cent solution was given for twenty consecutive treatments. At the end of the tenth injection all mucous patches had disappeared, and the eruption was fading rapidly. As no mercurial symptoms were present I carried the drug to effect. The twentieth injection showed the full effects of the drug, and the treatment was discontinued. At this time the patient was free from all syphilitic lesions outside of a fading discoloration that could still be seen on the body. The patient was allowed to rest for one week, when the internal treatment by the mouth was started.

Nine quarter grains of the protiodide were given before the full effect of the drug was produced. This dose was cut down one-half and the patient started on the continuous treatment. At the present date the patient shows no syphilitic signs, and physically he is in the best of health.

31 Pleasant Street.

CLINICAL REVIEW OF A CASE OF PELLAGRA—THE FIRST TO BE REPORTED ORIGINATING IN MICHIGAN.[1]

BY B. N. COLVER, M.D., BATTLE CREEK, MICH.

HISTORICAL.

Pellagra is an endemic systemic disease characterized by cutaneous manifestations of an erythemato-squamous and pigmentary character, associated with disturbance of the digestive tract and cerebrospinal system (Stelwagon).

It was earliest known in northern Africa, where it is still found, in Egypt, and Algiers. In 1735 it was recognized in Spain. It spread to Portugal and Italy. It was named Lombardian leprosy about this time. To-day all southern Europe, especially Italy and Roumania, is affected by this disease. There are between 50,000 and 100,000 cases in these two countries alone, a large number of pellagrins being found in the insane asylums. Tyson states that about 10 per cent of cases in southern Europe exhibit mental symptoms. The proportion in American cases is higher.

Forty-five years ago two cases were recognized and reported in the United

[1] Reported in the *Michigan State Medical Journal.*

States—one in New York and one in Massachusetts. From that time until 1906-7, pellagra either did not exist or was unrecognized in the United States. In the last two or three years, however, a large number of cases have appeared in sixteen or more States, mostly Southern. Between 5000 and 10,000 cases have been recognized, a large number probably going unrecognized (Searcy, Babcock, Wood, Bellamy, and others).

ETIOLOGY.

Race seems to play no rôle as a predisposing factor. All ages are affected, adults more commonly than young subjects. Sex has no influence. There is no family transmission or occurrence which cannot be better explained by environment or habits than by heredity. Previous disease has no influence except, perhaps, as it may bring about a general weakened state. Alcoholism is a positive factor. At one time some observers believed this to be an essential cause. Any habit or practice which results in general lowered vital resistance is a predisposing agent.

Any occupation which is accompanied by poverty or insufficient nutrition is predisposing. Cases from a large range of occupations have been reported. As before stated, northern Africa, southern Europe, and the southern United States furnish the large majority of the cases. An occasional case appears in the North, which cannot be traced to any Southern origin. Cases have begun in every month—the largest number in the spring and fall months—the month accredited with the most cases (beginning) being November. The poor are most commonly affected. The well-to-do are practically immune, so it is said. Any case appearing in the middle classes must be traced to some other source of malnutrition than poverty.

Mechanical traumatism seems to play no part either as a predisposing or exciting factor. Sunshine, by virtue of its heat or more likely its actinic rays, has been charged with initiating the disease (Bouchard). Several bacteria have been described as causing a specific intestinal infection. All of these have been discredited (Belmond). A general infection, brought about by intestinal infection, invasion of the blood and secondary infection of the lungs, pleuræ, pericardium, and pia mater of the brain cord, has been suggested (Cerri).

Under the head of chemical irritation may be mentioned the various ideas and theories about corn as the source of pellagra: (1) It was formerly held that corn was not a complete food. It would not properly nourish the body if used extensively in the diet. The malnutrition resulting was charged with causing the disease. (2) It has been thought to be due to damaged corn (Scheiber, Kaposi). (3) Corn picked before entirely ripe may ferment, under the action of a non-pathogenic unknown organism (mold), producing toxins (ptomaine—Lombroso) (Neusser). (4) Autointoxication (intestinal) due to an intestinal mycosis, which attacks the corn after eaten and possibly other foods, has been urged. (5) By some observers pellagra has been designated a state rather than a distinct disease. Any cause of marked malnutrition might produce a cachexia which would present the picture of pellagra (Guertin).

Sambon attacks the corn theory on the following grounds:

1. Pellagra is not found in many places where corn is used extensively.

2. It is found on the contrary where corn is not used or grown.

3. Pellagra is appearing in new places or decreasing in former strongholds without any detectable change in the dietetic habits of the inhabitants.

4. All proof of the corn theory is only philosophical, and nothing has ever been scientifically proven by proper experiments or observations.

Sambon's theory is that the disease is due to a protozoan parasite transmitted probably through a stinging or blood-sucking insect, possibly the sand-fly (*Simulium Reptans*), acting as carrier. The protozoan probably enters and inhabits the intestinal canal, causing the persistent diarrhea, and producing from the food

mass the specific (?) toxins which cause the psychical, nervous, motor, sensory, and cutaneous symptoms.

It is interesting to note that out of 175 cases of pellagra studied at the Peoria (Illinois) State Hospital, 84 per cent showed protozoal infection in the feces. In 12 out of 18 autopsies ulcers in the colon were discovered.

In another series of 52 cases reported by J. D. Long, protozoa (amebæ) were found in the feces in 50. Long also reports 12 cases studied in the Philadelphia Hospital for the Insane, in which amebæ were detected in the feces in every case.

PATHOLOGY.

The skin undergoes sclerotic changes, becoming leathery, and atrophies at the affected areas with a deposition of pigment, which persists even after the active dermatitis is relieved. There is hyperkeratinization with atrophy of the rete (Raymond). The subcutaneous fat is largely lost as the person passes into a cachectic state. The skin becomes markedly wrinkled, the patient having a senile appearance. The cardiac muscle shows pigmentary and fatty degeneration. There is often a simple anemia of moderate degree, but nothing characteristic. Pigmentation of the nerve cells of brain and cord has been noted; the same has been observed in the spinal ganglia. Atrophy of the anterior cornual cells is frequently seen. Sclerosis and degeneration of various tracts in the cord have been noted by different observers—the crossed pyramidal tract in the dorsal region, the column of Gall and the column of Burdach in the upper cord levels (Lombroso). The meninges of cord and brain have been found thickened, even with the formation of osseous plaques (Church and Peterson). Cartilaginous deposits on the articular surface of the vertebra, encroaching on the intervertebral foramina, have been described by J. D. Long (*Journal of the American Medical Association*, Aug. 27, 1910). This compression upon the nerves at their exits accounts for much of the rheumatic and neuralgic pain. Nothing specific has been recorded in the eyes or ears. The lymph nodes, especially of the abdomen, may be enlarged. The spleen may show fatty degeneration. All the abdominal organs tend to atrophy. The liver shows fatty degeneration. Atrophy of the muscular walls of the intestine and ulcers of the colon have been seen. Catarrh of the gastrointestinal mucosa has been frequently observed. The kidneys may show parenchymatous degeneration. Fatty degeneration has been reported. The urine is negative. Pleuritis has been reported. The lungs are not often affected. The muscles undergo marked atrophy and wasting in the late stages (cachexia). Decubitus has been seen. Osler states that symmetrical gangrene has been observed.

CLINICAL REVIEW.

The peculiar interest in this case lies in the fact that it is, so far as I have been able to learn, the first case of pellagra to find its origin in Michigan. It ran an acute course, such as the so-called "typhoid pellagra," and showed one typical period of abatement of symptoms. The observed onset was about April 1, 1910, and the demise September 18, 1910, a duration of five and a half months. It is probable that she was in the early stage some weeks before the time stated.

Mrs. X., white, American, twenty-five years old, married, housewife.

Family history: Father (aged fifty-four) and mother (aged fifty-three) alive and well. Six sisters, all well. One sister died in infancy. Two brothers, both well. Two children (aged four and two years), both well. Husband robust and well.

Personal history: Patient was born in Pennsylvania and moved to Michigan seven years ago. She has never been south of the Ohio river, nor out of Michigan for past seven years. Having never been strong her work has been relatively heavy, though she had only care of children and light housework. "No worry out of ordinary." Husband had regular employment and a good salary. She lived on simple mixed diet. (Later inquiry elicited the information that she never used corn-meal.) Never used

alcohol. Used tea and coffee very little. No history of any venereal disease.

Past medical history: No severe diseases in childhood. When six years old she fell onto a chair post and suffered an injury to the vagina which required immediate surgical repair. She has had leucorrhea quite constantly ever since, and has never been strong or robust like her sisters. She never had typhoid, rheumatism, or other severe illness. Has had several attacks of tonsillitis in past few years. One and one-half years ago she had plastic operations—trachelorrhaphy, colporrhaphy, perineorrhaphy, and shortening of the round ligaments.

Present illness: Patient has not been as strong as formerly any time since her operation eighteen months ago. In December, 1909, she weighed 110 pounds; her normal weight was 115 pounds. She gradually lost to 96 pounds by March, 1910. During this indefinite period of about three months her appetite failed, she became weaker, and suffered from persistent constipation. Early in April her hands became quite generally "chapped"—she thought this due to dyes used in coloring Easter eggs. A few days later a red spot the size of half a dollar appeared on the right forearm. She said it came on suddenly: was not visible in the forenoon, but was noticed in the afternoon. It reminded her of a sting. The surface was smooth. The eruption spread upward to the elbow and down to the finger-tips in two weeks. The same process then appeared on the left arm. She used some home lotions and ointments for a few days and then consulted a physician. He pronounced it an eczema and thought it would soon clear up. The same day she consulted a second physician, who said that he did not know what it was as he had never seen anything like it. He prescribed a tentative lotion, which seemed to cause an improvement. After a few days he changed his treatment to a powder. This did not seem to agree with the skin, which soon cracked, pus appearing in the cracks. About May 25 her throat and mouth became sore.

On June 9 she came from northern Michigan to southern Michigan (Battle Creek) to stay at her parents' home and seek further medical advice. At that time she had a sore mouth and throat, with a moderate degree of salivation, vaginitis with creamy discharge, and proctitis. The day after she came she used some laundry starch in washing and thought it made her hands much worse. She has always had an idosyncrasy for laundry starch. Every time she used it her hands became red and rough. A vigorous laxative was taken about this time to combat the persistent constipation. This ushered in a prolonged attack of diarrhea—six to thirty movements per day, which were very foul and fluid with flakes of mucus.

About June 15 I first saw her in consultation. At that time vesicles appeared between the fingers and over the backs of the hands. Simple ulcers on a red mucosa dotted the mouth. I concurred in a diagnosis of dermatitis venenata, thought to be due to the starch used a few days previously, added to the eczema caused by the toxic action of the dyes.

On June 17 the case was turned over to my care. Treatment for dermatitis venenata was continued for two or three days. The vesicles had become pustular. An examination of the pus from the pustules, mouth, and vagina showed staphylococcus aureus. An autovaccine was produced from the cultures. Under the vaccine treatment (5 injections at two days intervals) the pustules and vaginal discharge rapidly dried up and the mouth improved. The throat became practically non-sensitive. The diarrhea, however, became worse. The persistent bowel symptoms and peculiar skin condition aroused suspicion of the possibility of pellagra.

Physical examination: Temperature 98.4°; pulse 90; respirations 20. Patient was rather emaciated, weighing only 84 pounds, and somewhat feeble, so that she could not walk without assistance. Poor development. Had an anxious expression. The skin was generally dry. The backs of the hands and wrists and forearms nearly to the elbows showed hyperkeratinization with brownish pigmentation. The mucosa of the mouth and pharynx was bright-red,

with small superficial ulcers scattered over the inside of the cheeks. Her skin was extremely sensitive to even low degrees of heat. No edema; lymph nodes not palpable. Thyroid not enlarged, spleen negative. Ptosis, which had not been noticeable a week before, was quite apparent. The pupils were equal, reacting to light and convergence. Heart, arteries, and lungs negative. The abdomen showed slight tympanites; lower border of liver was about one fingerbreadth above costal margin, the liver dulness being slightly decreased. Pressure over abdomen showed slight general tenderness—otherwise negative. Pelvis negative except for vaginitis. The patellar reflexes were slightly exaggerated.

A diagnosis of pellagra was made at this time.

Clinical Course.—June 20 to July 28 she complained of nearly constant headache, pain in the back of the neck, and dizziness upon standing or sitting upright. By July 1 she had become so weak that she was ordered to bed. With only a short interval she remained in bed until her demise. About this time the similarity of the bowel symptoms to those in typhoid fever suggested the trial of a liquid low proteid diet. The extreme fetor of the stools, the frequency of bowel movements, and her general feelings improved. After a few days egg-white and other proteids were introduced into her diet, and the foul odor and general toxic symptoms reappeared. The antitoxic liquid diet was resumed. She complained of burning pain in the epigastrium (pyrosis) quite frequently. Her bowels moved as frequently at night as during the day. Later her bowels moved without warning, involuntarily. Several of the recommended remedies were tried—atoxyl, Fowler's solution, intestinal disinfectants, tannogen, beta-naphthol, bismuth subcarbonate, charcoal, sodium bicarbonate, calendula, and later the anti-amebic treatment suggested by J. D. Long in the *Journal of the American Medical Association* of August 27, 1910, quinine rectal injections, salines, and mercury and iodide alterative treatment. By keeping the hands and forearms bandaged, and thus excluding the light, the dermatitis began to subside. After the pustules and pus in the cracks dried up under the vaccine injections no more suppuration appeared. During this time she complained of periodic spells of feeling "awful." Nothing could be observed by her attendants. She would say she was afraid, thought something was about to happen, and felt indefinitely oppressed. When interrogated in the quiet interval she said she had nothing to fear, but couldn't help the spells. These periods varied in length from a few moments to an hour or so, and in frequency from two or three to twenty or thirty a day. Her disposition showed some tendency to change toward depression and discouragement, though not over her own disease or condition. She suffered with insomnia. Her mouth remained fairly clean, not showing anything like typhoid sordes. She suffered with hiccoughing and vomited two to five times daily for a period of ten days. The hands and arms became clean, having desquamated several times. The scales were of horny hardness and varied from nail-head size to partial casts of the fingers. The skin was smooth below and fairly soft, but remained somewhat pigmented. After the hands and arms were clean the dermatitis appeared on both feet, the right side of the neck, the bridge of the nose, and under both eyes. Her finger-nails during the earlier weeks (June and July) began to show an increasing white growth (lunula). During the period of improvement (July 28 to August 15) new growth took on the normal transparent appearance between the normal lunula and the added white zone. With the return of other symptoms the new growth again became opaque (white), giving the nails a transversely striated appearance.

July 28 to August 15. At this time her bowel symptoms improved. Her appetite, strength, disposition, and nervous symptoms also improved. She began to sit up, to take a few steps, and later to walk out to the table for meals. She was allowed only a very little solid food, as baked po-

tatoes, rice, and toast. Her last recorded weight about this time was 70 pounds.

August 15 to September 1. Her appetite again failed and she returned to bed. She soon entered a stage of cerebral (cortical) bulbar and cord irritation, resembling in certain respects tetany and uremia. The mental symptoms ranged from depression and melancholia to irritation and mania. These symptoms appeared paroxysmally, varying in frequency and duration. One whole day without cessation she raged in delirium, suffering delusions and hallucinations. Again she would scold her attendants for one or two minutes, and then apologize in the lucid interval. She knew what she did but could not behave, so she said. Potassium bromide, bromidia, chloral hydrate, veronal, trional, codeine, heroin, and morphine were used for sedation and hypnosis at various times. The motor symptoms of fibrillary twitching, intentional and unintentional tremors, tonic and clonic spasms, involved at various times the muscles of the entire body. At one time she would suffer facial contortions, or torticollis, to left, right, anteriorly, or posteriorly; at another time the muscles of respiration or forced respiration, very similar to the breathing of tetany, or at times like the breathing in uremic convulsions; again, the diaphragm would contract spasmodically; again the muscle groups of back, arms, and legs. The gross spasms of the arms, for instance, were easily controlled, as a rule, by grasping the hand and elbow. Meantime, however, a constant tremor could be felt affecting all the fibers of the muscle group. This could not be controlled except by opiates, and even then not completely at times. Tendon reflexes were exaggerated. Her sensory symptoms were persistent. She complained of her ankles paining, of general soreness, of burning in the affected skin areas, and of extreme hypersensitiveness to heat. She thought even warm water was about to scald her. Cold felt grateful to her skin in general. She had headache and backache more or less constantly.

September 1 to 18. Her mind cleared, and she did not suffer the mental symptoms again until September 10. The motor symptoms, however, were much worse. She had been quite talkative while suffering the mental symptoms. In this quiet spell she would remain speechless even when asked a simple question several times. She was entirely cognizant of all that went on, as she showed when she would occasionally talk. At this time (September 1) the eruptions of the hands and feet, the sore mouth and throat, and diarrhea reappeared. Her pulse was constantly rapid, 90 to 130; it was fairly full and regular up to September 6; after that date it was often thready. Heart and lungs negative. Her temperature curve was practically normal throughout. No visible blood appeared in the stools, nor could occult blood be shown in several examinations.

On September 10 she became irritable again at short intervals.

On September 11 she quieted down mentally. There were but few psychical outbursts, though she was seldom rational from that day forward. During the week her pulse ran thready, her muscles remained rigid, and the fibrillary tremors continued. No paralysis was demonstrable. Her lungs gave evidence of retained bronchial mucus and edema. She suffered an occasional respiratory spasm, followed by a short coughing spell. Her bowels became very tympanitic. She died at 10.30 A.M., September 18. No autopsy was granted.

Dr. A. S. Kimball, city health officer, Dr. A. W. Alvord, member of the Michigan State Board of Medical Examiners, several other local physicians, and three visiting physicians from the South saw the case in consultation.

Several laboratory examinations of urine, blood, and feces were made between July 1 and September 10. The essentials were as follows:

Urine: Quantity, 800-1000; specific gravity, 1017-1020; total solids, 30-40 gm.; acidity, 1.20-1.50 [gm.H_3PO_4]; urea, 14-18 gm.; chlorides, 7-9 gm.; indican, 100-128 (Folin scale); indolacetic acid, xx; diazo, negative.

The thing of interest is the indican and indolacetic acid reading, the great quantity indicating excessive intestinal putrefaction. The microscopic findings were negative.

Blood: Hemoglobin, 80-90 per cent; red cells, 81-88 per cent; white cells, 90-120 per cent; small lymphocytes, 25 per cent; large lymphocytes, 4.5 per cent; polymorphonuclear neutrophiles, 68.5 per cent; eosinophiles, 1.7 per cent; Widal reaction, negative.

Feces: Daily amount could not be computed; foul odor; mucous shreds; indol, 5-7 mgms.; bacteria, 3,316,150,000,000 (one count) per gramme; Gram positive, 26.4 per cent; Gram negative, 73.5 per cent; undigested food remnants; bodies resembling amebæ, but not showing typical movement.

In the feces, the immense bacterial count, the large number of Gram positive bacteria, and the high content of indol are all significant of the source of toxin.

The observation of bodies resembling amebæ is interesting, though it is to be regretted that a more positive laboratory conclusion could not have been reached.

CONCLUSIONS.

The course of the case seems to be rather indefinitely divided into six periods. New symptoms or changes appeared in each new period, though those already present were only partially or not at all relieved.

1. About three months (January, February, March), general malaise, loss of appetite, strength, and weight, and persistent constipation.

2. About two months (April, May), dermatitis, stomatitis, proctitis, vaginitis.

3. One month (June), diarrhea, headache, pain in the neck and back, dizziness.

4. One month (July), periodic psychical symptoms, change in disposition.

5. One month (August), cerebrospinal irritation with paroxysmal mental, respiratory, and general motor symptoms.

6. Two weeks (September), failing of heart and lungs with marked asthenia, collapse, and death.

It appeared to be an intoxication probably of intestinal origin, with evidence of local (gastrointestinal) irritation and inflammation, toxic dermatitis, and cerebrospinal irritation.

ACUTE NEPHRITIS FOLLOWING THE INTRAVENOUS INJECTION OF SALVARSAN.[1]

BY HENRY TUCKER, M.D.,
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Having used this remedy in a number of cases in my own practice, and having also the opportunity of observing the remarkable results obtained by others in a large series of cases, and on account of the tendency to its indiscriminate use in all suspected cases of syphilis, I feel called upon to report the following cases in detail:

Case 1.—Male, aged thirty, first seen April 28, 1911. Family history negative. Previous history, ordinary diseases of childhood; has enjoyed good health up to the present time; denies alcohol or previous venereal infection.

Present illness: About three weeks ago the patient first noticed soreness with redness of the mucous surface of the prepuce, followed in five days by a painful swelling of the glands of the right groin.

Physical examination on the first visit: A well-nourished, fairly muscular man; subcutaneous fat scanty; skin pale, warm, and moist. Eyes: pupils equal, regular, reacting normally to light, accommodation, and convergence; eye ground negative. Tongue: slight whitish fur. Chest normal in shape, supra- and infraclavicular fossæ depressed. Lungs negative throughout. Heart normal in size and position; apex, fifth interspace, just inside nipple line; sounds and muscular tone good; valve sounds not accentuated; no murmurs; pulse regular, volume small. Abdomen: scaphoid negative, except for right inguinal bubo; there is a phimosis with slight purulent discharge; no evident induration.

[1]Reported before South Branch Philadelphia County Medical Society, May 26, 1911.

April 29, 1911. Bubo incised under local anesthesia. Circumcision refused.

May 5, 1911. Maculopapular skin eruptions, most marked on the face, forehead, and chest; a few scattered lesions on the buttocks; complains of sore throat and joint pains. Postcervical and epitrochlear glands slightly enlarged. Urine acid, 1024; trace of albumin, a few leucocytes, no casts, volume normal.

May 10, 1911. Wassermann+++.

May 12, 1911, 2.30 P.M., 0.6 gm. salvarsan given by intravenous method. One hour later patient had marked vomiting, chill, and rise of temperature to 101.2° F., also large watery bowel movement, subjectively uncomfortable. At 5 P.M., temperature 101°, pulse 126, respiration 34. Pulse volume poor; slight dyspnea.

May 13, 1911. Quite comfortable during entire day; several large watery movements; no urine voided since injection. Catheterized, bladder empty; pulse weak. 5.30 P.M., marked dyspnea; pulse trickling, cannot be counted; mind clear.

The condition became rapidly worse in spite of most active treatment. The man died at midnight. Autopsy refused.

Case 2.—Male, aged twenty-four, first seen May 8, 1911. Family history negative. Previous history, usual diseases of childhood; gonorrhea two and five years ago respectively; uses opium, whisky, and tobacco to excess at times, but not habitually.

Present illness: Chancre seven months ago followed by a skin eruption, for which he took treatment for two months. Present condition: marked pharyngitis.

Physical examination: Poorly nourished and developed; subcutaneous fat scanty. Eyes: pupils equal, reacting normally to light, accommodation, and convergence; eye ground negative. Tongue red and moist. Chest well shaped. Heart normal in size, sounds loud and clear; muscular tone good; no murmur detected; apex beat diffuse, very marked in fifth interspace in midclavicular line; pulse regular, volume full. Lungs resonant throughout. Abdomen negative.

May 10, 1911. Urine acid, 1022; no albumin, sugar, or casts. Wassermann+++.

May 12, 1911, 3 P.M., salvarsan 0.6 gm. intravenously. A few minutes later voided urine; two hours later excessive vomiting, with copious watery bowel movement. Temperature 105°, pulse 120, respiration 30. The temperature then fell rapidly to 96°, twenty hours after the injection. Urine completely suppressed for twenty-four hours in spite of active treatment. Mind clouded, slightly delirious at times; repeated watery movements. Urine obtained by catheter twenty-four hours after injection—acid, 1030, markedly albuminous, granular casts, many leucocytes, and free blood.

May 18, 1911. Profuse herpetic eruptions on lips, nose, and cheeks. From May 14 the urine gradually increased in amount, with disappearance of albumin and symptoms. May 18, urine normal; the specific eruptions rapidly fading.

I have purposely omitted reporting cases successfully treated by this method to emphasize a danger not hitherto recognized.

CONCLUSIONS.

1. My own experience with this drug, combined with the observation of the work of others, convinces me that the drug is a valuable adjunct in the treatment of syphilis, but should not be used to the exclusion of mercury or the iodides.

2. Salvarsan will not cure syphilis in one or two injections.

3. The best results are obtained in the more active forms, or so-called precocious cases, chronic, tertiary, and hereditary syphilis.

4. The results in mild, secondary, and primary syphilis are no better than can be obtained by mercury properly administered.

5. The intravenous is the best method in hospital practice, but as the advantage is so slight and the technique difficult I would advise the intramuscular method to be first tried in all cases.

6. No matter how extensive the experience, or faultless the technique, accidents are bound to occur when we introduce at one dose a drug capable of poisoning where some unknown factor or idiosyncrasy exists.

EDITORIAL.

THE VALUE OF RECTAL FEEDING.

Although during the past decade a number of researches have been published which seemed to prove beyond doubt that so-called rectal feeding is, from the standpoint of nutrition, a practically useless measure, we believe that a large number of the profession still resort to it whenever the condition of the stomach is so deranged, as a result of functional or organic disease, that it is unable to deal with or retain food. Thus, rectal feeding is often used in cases of gastric ulcer, gastric carcinoma, and obstinate vomiting, whether it follow the use of an anesthetic, whether it be due to uremia, or whether it complicates the course of pregnancy.

On a number of occasions during the past ten years we have called attention to the researches to which we have just referred in the editorial or Progress columns of the GAZETTE, and increasing experience has led us, from the standpoint of the clinician, to place much confidence in the view that the patient who is thought to be fed by an injection into the rectum of predigested foodstuffs is in reality starving, almost, if not quite, as severely as the patient to whom rectal injections are not given. On the other hand, it cannot be doubted that the injection into the rectum of normal salt solution, or of solutions containing nutritious substances, provides the body with a certain amount of liquid which is necessary for its existence, keeps the tissues bathed in their essential fluids, and provides the kidneys with liquid in which they can excrete the solids which it is their duty to get rid of. Almost every clinician of experience knows very well that when a predigested enema of milk and eggs is given, practically all the solid material can be passed or washed out of the bowel twenty-four hours afterward, although all of the liquid may have been absorbed.

In the *Proceedings of the Royal Society of Medicine* for April, 1911, Dr. Brown has reported the results of an investigation which he has carried out upon this subject, and his conclusions are in accord with those who have investigated this field of nutrition in previous years. Dr. Brown concludes that not infrequently rectal injections are the cause of a gain in weight, but this gain is due rather to the absorption of fluid than to the absorption of foodstuffs. It is true that the introduction of dextrose in not more than 5-per-cent strength in normal salt solution results in all probability in the absorption of a considerable amount of this foodstuff, or at least of a sufficient quantity to put off or prevent the development of starvation acidosis. This is an important consideration, because we have been too prone in the past to ignore starvation acidosis, and to consider it as occurring only as a complication of diabetes, or more recently as a sequel to the administration of chloroform. If more than 5 per cent of dextrose is used, it is apt to cause irritation and pain.

Referring once more to the matter of how much foodstuff can be absorbed by way of the rectum, it is interesting to recall the fact that Boyd reached the conclusion that it was possible under very favorable circumstances to provide the body by this means with about one-ninth of the number of heat units which are necessary for the maintenance of weight. But this possibility is only present in those who do not suffer from rectal irritability and are in the most favorable class for rectal alimentation.

We also regard with a good deal of satisfaction and approval the opinions expressed by Dr. Brown, in the article to which we have just referred, concerning other matters associated with the question of rectal alimentation. He well points out that thirst can be relieved by the use of a saline injection better than by the use of a nutrient enema, and that thirst can also be diminished by hypodermoclysis. Then, too, rectal alimentation is a difficult thing to carry out without producing a condition of

uncleanliness in the bedding. The exposure which it necessitates, if the injection is to be given skilfully, is objectionable, particularly if patient and nurse are of an opposite sex. Again, in cases of gastric ulcer it would seem probable that nutrient enemata may be distinctly disadvantageous in that they cause reflexly a free secretion of gastric juice, which is exactly what the physician wishes to avoid when gastric ulcer is present and he is resorting to rectal alimentation.

Another important point which is not to be forgotten in some cases in which rectal alimentation is practiced for a long period of time is the fact that vomiting may become persistent as a result of intoxication arising from starvation. In these instances the vomiting is to be checked, not by continuous starvation, but by a recognition of the fact that the vomiting of acidosis is more dangerous than the gastric condition for which the starvation was instituted. In other words, the time comes when the persistent use of feeding by the rectum not only does no good but may actually do harm, in that a condition of the system is produced which is far worse than the primary one for which treatment was instituted.

SEDATIVE DRUGS IN SURGICAL ANESTHESIA.

We believe that we are correct when we make the statement that the use of morphine and scopolamine for the purpose of producing surgical anesthesia is now recognized as having an exceedingly limited range of usefulness. In other words, the profession has come to recognize that these drugs can be employed for the relief of pain produced by operative interference, but that they should be rarely so employed; or, to put it in still another way, we have once more returned to the view that, after all, chloroform, ether, and nitrous oxide are the anesthetics, or pain-relievers, of choice.

The question as to the use of morphine and scopolamine in comparatively moderate dose for the purpose of producing "twilight sleep" prior to the administration of chloroform and ether is, however, still to be decided. We think that a large number of the profession see no objection to their employment, and we know that a considerable number of surgeons use morphine and scopolamine for this purpose, particularly where they fear psychic shock. It is also true, we believe, that a very considerable number of surgeons who agree with this plan theoretically, nevertheless but rarely resort to it, admitting that other men get good results from it but still failing to employ it themselves. From time to time articles appear in American and foreign journals which refer to this preliminary use of sedatives in enthusiastic terms, and we have called attention to them in our editorial and Progress columns. It is rare to find an article which condemns their use, as indeed it is rare to find contributions which condemn any plan, the average medical writer presenting positive, or favorable, testimony rather than negative or unfavorable testimony, as a rule.

For these reasons we have read with interest an article on this subject in the *Journal of the American Medical Association* of May 6, 1911, in which Herb has something to say concerning this matter. This writer utters a protest against the use of morphine and scopolamine, or either drug by itself, before ether and chloroform are used, on the ground that they obscure certain symptoms produced by ether and chloroform which are of value to the physician in determining the effects of these drugs. While this writer admits the therapeutic fact that one drug often augments the action of another, and that such augmentation is peculiarly true of morphine and ether or chloroform, it is asserted that this combination of effect may be excessive, and that the patient, if an accident occurs, is not under the influence of a volatile and comparatively fleeting drug, but is under the double influence of the volatile substance and the more persistent vegetable alkaloid. Furthermore, this author claims that the use of morphine by diminishing cough tends to permit the accumulation of mucus and foreign materials in the trachea and bronchi, which the patient would expectorate as ordinary surgical anesthesia is

rapidly dissipated; and, again, that many persons suffer from nausea and depression after the use of morphine, which increases postoperative misery, and which is often quite severe enough as a result of the use of a surgical anesthetic.

There is without doubt some force in this line of argument—sufficient force to make us careful not to resort to the use of scopolamine and morphine before employing ether and chloroform as a routine measure; but we do not think that the arguments which are advanced have sufficient weight to indicate that this plan should never be employed, for we think it has been proved beyond all doubt that in nervous and apprehensive patients the use of these sedatives not only greatly diminishes apprehension and mental suffering, and makes surgical anesthesia possible with a minimum of anesthetic, but it also tends very distinctly to put aside postoperative complications.

HEMORRHAGIC DISEASE OF THE NEW-BORN TREATED BY SERUM.

This condition is not commonly met with, but when it occurs has so high a mortality rate that death almost invariably takes place. Within the last few years a considerable number of cases have been reported by different clinicians in which the hypodermic injection of comparatively small quantities of blood serum has exercised a remarkable effect in stopping hemorrhage, and life has been saved in a goodly proportion of cases. Very recently, an instance of this kind has come to the knowledge of the writer, and in the *Yale Medical Journal* for March, 1911, Steele, of New Haven, Connecticut, reports a case of a white male child who began passing blood by the bowel when two days old. The hemorrhage continuing, 150 Cc. of the blood of the father was taken, the serum allowed to separate by standing, and three hours later 15 Cc. of the serum was subcutaneously injected, and some hours afterward a second injection of 10 Cc. was given. The bleeding ceased immediately after the first injection.

In the other case to which we have referred a number of injections with human serum derived from different persons were employed over a period of several days with excellent results. It is probable that blood serum derived from animals could be used, when a donor could not be found, with equally good results, although there may be somewhat more danger from serum sickness when an animal's blood is employed than when human blood is used.

This method of treating this condition is much easier than by a direct transfusion of blood, and can be resorted to at a time when danger is threatening but not grave; whereas actual transfusion, for obvious reasons, is rarely resorted to except in extreme cases, and in which the conditions may already be so serious that the chances of recovery are small.

COMMON INJURIES TO THE KNEE-JOINT AND THEIR CONSEQUENCES.

Probably the commonest injury to the knee-joint is the laceration of the capsular attachments of the internal semilunar cartilage, induced by excessive rotation of the tibia. Lane (*British Medical Journal*, March 11, 1911) observes that the cartilages occupy a space which must necessarily be filled, and, if they be removed and there be no fluid present in the joint, there must necessarily be a new growth of connective tissue spreading over the inferior surface of the adjacent portion of the capsule. He holds that the fibrocartilages vary in area and bulk and mobility inversely in accordance with the apposition of the articular surfaces, and consequently the extent of muscular development. In the loosely fitting joint force necessary to produce an injury to the internal cartilage may be very slight. As a result of bruising of the free margin of the articular crescent swelling and destruction result. Lane holds that the portion most likely to be damaged is the back part of the middle third. In proportion as a segment of the free margin of the cartilage is destroyed so its total length is increased, and also its mobility or

liability to injury. When the leg is extended greater force is needed to damage the fibrocartilage. In extreme extension abduction must be sufficiently forcible to rupture the internal lateral ligament before any separation from the internal condyle of the tibia can be effected by it. When the interarticular fibrocartilage is entirely torn from its capsule, the capsule of the internal lateral ligament is displaced inward, and complete extension is impossible since the back part of the cartilage intervenes between the articular surface of the tibia and femur.

Of the symptoms of damage to the internal cartilage, these vary from pain and tenderness along its anterior two-thirds, most marked when the knees are bent, to extreme tenderness and distinctly palpable swelling. There is often synovial effusion, and, if the cartilage be displaced from its marginal attachment, it is not possible to extend the joint completely. The method of reduction consists of flexion of the knee and abduction, the external condylar joint being used as a fulcrum. Should this method be unsuccessful the cartilage should be removed at once. When reduction is possible, the limb should be held extended as long as pain and tenderness and swelling last. Thereafter vigorous massage is indicated, the patient being instructed, as soon as walking is practicable, to turn the toes straight forward and to avoid such games as tend to produce twisting motion in flexion; moreover, it is well to limit this twisting motion by a brace.

In cases of recurrent inflammation from slight trauma, and this in spite of treatment, operation is indicated. The incision is a matter of little moment provided the capsule structures be accurately sutured and the function of the joint be early restored. Synovial effusion is controlled by elastic pressure.

Lane has long since held that the large majority of cases of tuberculous infection of the knee-joint originate in the local depreciation of vitality consequent on damage to the internal fibrocartilage. He thinks that this predilection established by an injury of the cartilage occurring in subjects likely to develop tubercle, or already possessing some tuberculous focus in any other portion of the body, should be taken into account as an indication for or against operation.

Tuberculosis once having started, he believes that in slight cases rest and tuberculin, with the most scrupulous attention to the gastrointestinal drainage, are the most effective means of treatment. He believes that the failures in treatment by tuberculin are due in most cases to the practitioner and not to the principle.

As a means of facilitating intestinal drainage he employs pure liquid paraffin, having completely discarded all drugs of a purgative character, and is greatly pleased with the result. When the condition of the joint is such that it is not likely to be improved under this treatment, Lane divides the ileum and puts it as low down as possible. This is the lateral implantation which he always does now, into the side of the rectum. The use of a soft-rubber tube passed up through the anus, lower part of the rectum, and through a length of the ileum serves to drain the small bowel and reduce the risk of the operation enormously. He has discarded such operations as erasions and excisions of joints for tubercle, and obtained far better results in every way by dissociating their cesspool, the colon.

As to the comparatively rare injuries about the knee-joint, such as bruising of synovial fringes, if the joint be opened during the acute stage this will be found, readily recognized and dealt with. Otherwise differentiation may not be possible. In several cases in which the internal fibrocartilage was removed without affording the patient any relief, cure at once followed on removing the bulky ligamenta alaria. Loose cartilages which in many instances are the effect of traumatism often disappear. Unless they are doing active harm they can be left.

Jones, whose experience perhaps is unique in the treatment of injuries of the knee, calls attention to the fact that in practically all cases of injuries to the cartilages these are displaced inward, and that, when the protrusion is felt, it is due either to hemorrhage or to buckling of the cartilage,

which gives an irregular feel to the articular margin. Considering the wedge shape of the disks, a displacement outward could not possibly produce a locking of the joint. The most constant symptom of the injured semilunar is localized pain after pressure on the injured spot. It is best elicited while the knee is flexed, when pressure between the bones can be more effectively made. Locking was found in less than half the cases. Jones has also observed a comparatively large number of cases in which thickening and enlargement about the structures of the ligamenta alaria were found. As distinguishing between the loose or injured semilunar cartilage, the symptoms of the nipping of a synovial fringe are less acute in its primary occurrence than are those of a displaced cartilage. The pain is strictly local and is not participated in by the internal lateral ligament. Frequently a prominence can be found over the site of pain, and no matter how often nipping occurs effusion follows. The joint commonly creaks, and there is often an obvious swelling on each side of the ligamentum patellæ (due to the chronic thickening of the infrapatellar pad).

Lipomata, which sometimes lock the joint, are accompanied by swelling about the lower part of the patella and a painless effusion. The symptoms are rarely acute and aggravated by exercise. Jones calls attention to the fact that the commonest injury to the knee-joint is a sprain or rupture of the internal lateral ligament, and that this should not be mistaken for a slipping cartilage. Next in order of frequency come injuries to the inner cartilage. When such occur reduction must be absolute; all movement of the cartilage must be checked until union of the torn structures is completed. No lateral strain must be allowed until the torn or stretched internal lateral ligament has recovered its tone and strength. The test of reduction if it is complete is full extension and the power to voluntarily hold itself. The method of reduction is sometimes extremely difficult; in some old cases it is extremely troublesome. What is the best routine manipulation? Acute flexion is always painful, but it is the only position where internal rotation of the tibia is most free; lateral deviation separates the bones which hold the cartilage, and full extension allows of readjustment and places the limb in such a position as to permit of accurate union of the internal lateral ligament.

Prolonged fixation, splinting to avoid external rotation, exercise and massage are means which are usually successful. In the recurrent cases the heel and sole of the boots are altered. The heel is elongated and raised on its inner side, and the inner side of the sole is fortified by a small wedge of leather. The patient is instructed to turn the toes in in walking. In massage it is particularly important to pay attention to the quadriceps muscle.

As for the operative indications, displacement does not call for intervention, providing replacement is possible, nor do recurrent cases unless each recurrence be followed by symptoms of joint irritation. Operation, however, he thinks imperative in the recurrent cases when men work or stand in dangerous places, which indeed may lead to serious consequences. Perfect recovery may be predicted in the great majority of cases. In operating Jones makes a 3-inch incision slightly curved and extending from an inch within the lower angle of the patella to half an inch below the tibial margin, curving more acutely at this point toward the lateral ligament. The finger is never put within the joint. He considers it only necessary to remove the loose portion of the cartilage, a detached anterior portion, or a circumferential tear. After removal of the cartilage search should be made for fringes, tabs, or other possible agents which may cause trouble later. Jones never ties the vessels; he always uses a tourniquet until the dressings are applied and never drains. The synovial membrane, capsule, and skin should be separately sutured. The stitches are left in position for eight days, the knee kept slightly bent in a splint for the same period, and then passive movements and massage started. In about four weeks normal exercise is allowed.

REPORTS ON THERAPEUTIC PROGRESS.

INDICATIONS OF ACID INTOXICATION IN ASIATIC CHOLERA.

In the *Philippine Journal of Science* for February, 1911, SELLARDS and SHAKLEE discuss this question in connection with the method of treatment. They conclude that the stage of reaction and uremia in cholera and the acid intoxication of diabetes have the following features in common:

1. There is a well-marked tolerance for alkalies; as much as 90 grammes in cholera and even 200 grammes of sodium bicarbonate in diabetes may fail to render the urine alkaline. In certain stages of both diseases, sodium bicarbonate possesses pronounced diuretic properties.

2. The relative and absolute amounts of ammonia in the urine are considerably increased in both diseases. The administration of alkalies, even in large amounts, sometimes fails to reduce the excretion of ammonia. In cholera, the urine frequently shows a pronounced diminution in the amount and percentage of urea; some evidence was obtained which suggests that the nitrogen may fail to be excreted as urea or ammonia, even when the organs which form urea are capable of performing their function and the kidney is able to excrete urea.

3. Preliminary tests indicate that there may be a definite reduction in the carbon dioxide content of the blood in the uremia of cholera as well as in diabetic coma.

4. In both diseases a diminished alkalinity of the blood has been reported.

5. The injection of alkalies in the late stages of either disease usually modifies the course without affecting the ultimate termination. The early administration of alkalies in cholera has been effective in preventing death from uremia without any apparent increase in the number of deaths from other causes.

The exact significance of these analogies can be determined only by a thorough investigation. Acetone and acetoacetic acid have been noted in the urine of cholera cases, but no excess of acid has been found which corresponds to the quantities of *b*-oxybutyric occurring in diabetes. Two forms of acid intoxication are distinguished by Naunyn, namely, a relative and absolute type. Loss of alkali from the body apparently may result from a pronounced diarrhea, this loss giving rise to a relative acidosis. It also is conceivable that there may be an excessive quantity of acid present, resulting in the production of an absolute acid intoxication in cholera.

INTESTINAL ANTISEPSIS.

KENDALL in the *Journal of the American Medical Association* of April 15, 1911, says that changing the metabolism of bacteria may be made use of in such infections as typhoid, cholera, and dysentery. The Shiga type of B. dysenteriæ produces a powerful intracellular toxin, and the work of recent observers would indicate that it is formed only in broth having a strongly alkaline reaction. It is obvious that this condition of a strongly alkaline reaction is realized only in the absence of fermentable sugar. It is equally true that the Shiga bacillus ferments dextrose, producing acid. It follows, therefore, that if this organism is fermenting dextrose it is not producing toxin. The Flexner type of B. dysenteriæ agrees with the statements about the Shiga bacillus made above, except that this form does not produce an intracellular toxin. It does, however, elaborate an intracellular toxin apparently.

The intestinal flora of babies suffering from bacillary dysentery consists essentially of three organisms: B. dysenteriæ (Shiga, Flexner, or both), B. coli, and the streptococcus.

As a routine treatment, such babies are starved, and this starvation, together with the severe diarrhea, which is a feature of this disease, results in a very thorough cleaning out of the alimentary canal so far as food of any kind is concerned. This

dysenteric flora, then, is living on the intestinal secretions in the absence of sugar (the sugar of the body is used up quickly, and the body then draws on its nitrogen to keep up the vital functions), and it is essentially putrefactive in nature. The dysentery bacilli are elaborating toxin, while the colon bacilli are forming putrefactive products, both of which must be harmful to the child. The colon bacillus aids the dysentery bacillus, and the host has to detoxicate such putrefactive products as are absorbed by the alimentary canal in the liver, and excrete them through the kidneys. This throws the additional strain on an already weakened organism.

The principle involved in the treatment of bacillary dysentery, from the point of view of the bacteria concerned in the morbid process, is to feed carbohydrate. This carbohydrate is intended primarily to change the metabolism of the organisms in the lumen of the intestinal canal from proteolytic to fermentative bacteria. These bacteria, therefore, so long as there is sugar present which they can utilize, no longer produce toxins and putrefactive products from the protein of the intestinal contents, but acids instead. The patient is at the same time obtaining a readily utilizable food with a minimum expenditure of digestive energy. Another advantage gained by this procedure is the readiness with which the baby takes the requisite amount of water. Experience has shown that it is very difficult to make infants take water, but the addition of the sugar makes it more palatable. This method of introducing fluid does away with the disagreeable necessity for saline infusions, which are often a source of trouble.

It is not a matter of indifference which sugar is fed to these patients. Lactose appears to be the most advantageous for several reasons. In the first place, it is a sugar peculiar to mammals, and not many bacteria other than those normally present in the alimentary canal can utilize it. Consequently, if the digestion of the patient is weakened to such an extent that it cannot even hydrolyze lactose, there is no great harm done because the exogenous bacteria cannot use the lactose as such. Again, lactose is physiologically the most easily assimilable carbohydrate.

If, then, lactose is fed to dysentery babies by mouth in small, often repeated doses, the bacterial changes following its administration are as follows: The colon bacilli and other lactose-fermenting organisms of the intestinal tract attack the sugar in preference to the nitrogenous substances, forming acids in place of putrefactive products. Lactic acid predominates among these acids, and this acid is apparently inimical to the development of the dysentery bacillus. The patient benefits in two ways from the change in metabolism of the colon bacillus—there is a diminished formation of putrefactive products, and in addition those dysentery bacilli in the lumen of the intestine are exposed to the lactic acid generated by the colon bacilli. Usually there are a few of the normal intestinal lactic acid bacilli left in the alimentary canal, and these too begin to proliferate and to form lactic acid; this increment in acid formation acts even more energetically in opposition to the dysentery bacilli.

Under these conditions the streptococcus tends to disappear, and this is a point of considerable importance, since the streptococcus frequently appears as the terminal infection in dysentery cases. The cause for this disappearance is at present unknown to the author. It is a curious fact that one may recover cultures of these or similar cocci by growing the fecal mass in strongly alkaline broth.

If the digestion of the patient is still active enough to break down the lactose, the dysentery bacilli themselves will become acid-formers instead of toxin-producers, because these bacilli can attack dextrose, which is one of the hydrolytic products of lactose. This applies principally to those bacilli which are found in the lumen of the alimentary canal; those in the mucosa would at first sight seem inaccessible, but the stream of sugar which is absorbed by the host passes through the mucosa, and in addition it is possible to restore the normal

sugar content of the blood by transfusing dextrose. The sugar is carried to all parts of the body, and it is not at all impossible that some of it may even reach the invasive organisms, and be utilized by them.

It is clearly not the purpose of this paper to discuss the factors other than the use of sugar in the treatment of these cases; all that is hoped for is to present the development of the subject of intestinal bacteriology in so far as the author has had a hand in it, and to show that these purely laboratory studies can be made use of in the therapeutics of the intestinal canal.

It is obvious that this general principle of fermentation taking precedence over putrefaction can be made use of in many instances, both medical and industrial, in which bacterial activity plays a rôle.

HEART FAILURE.

MACKENZIE, in the *Lancet* of April 15, 1911, tells us that pursuing his work until lately amongst individuals, most of whom were actively engaged in manual labor, the subject of treatment was all-important, as they would not desist from work unless actually compelled by force of circumstances. He therefore saw many people whom on theoretical grounds he considered unfit for work who continued to labor in spite of warnings and were little the worse. This caused him to look more carefully into the circumstances of each case, to find out why, for instance, hearts damaged by old rheumatic lesions were capable of so much work, and when he came to appreciate the reason, there was also placed in his hands a reasonable line to follow in managing such cases during their temporary attacks of heart failure. Recognizing that the exhaustion of the heart was due to an insufficient period of rest, a full inquiry into all the patient's circumstances frequently led to the recognition of many events in the daily life which by modification would save the heart much exertion, while the business or work of the individual could still be continued.

From this arose the first and most important indication, namely, that an individual affected by a heart lesion which diminishes his work force must live within the limits of his powers. This can only be done by the period of rest being sufficient to restore the exhaustion of the work force. In this way alone will heart failure be avoided and a reasonable prospect of longevity be attained. Treatment need not be given in the presence of any abnormal condition, unless there is distinct evidence of heart exhaustion. Where there is such evidence, then the treatment, in the first place, must consider the possibility of diminishing the amount of daily effort.

From the point of view that heart failure arises because the period for work is so great that the period of rest cannot restore a sufficient amount of work force, the essential principle of treatment becomes self-evident—namely, rest. Though the beneficial effects of rest are invariably acknowledged, they are far from being sufficiently appreciated. When we scrutinize any system of treatment it will be found that the success of the treatment depends entirely upon the amount of rest the heart has procured. It seems probable that drugs which have such a potent and beneficial effect upon the heart as those of the digitalis group owe their good effect mainly to the amount of rest procured by the slowing of the heart's rate. At all events, in the researches the author has been carrying on for some years the cases which have obtained the greatest benefit from the digitalis were those in which the heart's rate was decreased by the digitalis. The author asserts he has repeatedly seen relapses of patients coincide with an increase in the pulse-rate when the digitalis was diminished or left off. The vast majority of patients in whom digitalis acts with such marvelous effect in slowing the rate and improving the condition are those affected by auricular fibrillation. The reason that digitalis has acquired such a reputation as a cardiac drug is due to the peculiar susceptibility of patients with auricular fibrillation, and practically all recorded cases illustrating the remarkable effects of digitalis are cases of auricular fibrillation.

Hearts with the normal rhythm are seldom so sensitive to the digitalis, and in them there is not the same tendency to slowing of the rate.

While in all successful systems of treatment rest is always prescribed, its good results are not always recognized, because at the same time some special agent is employed, such as a drug, a bath, or an exercise, and the good results are attributed to the special agent. It is for this reason that the therapy of heart affections is loaded by such an array of therapeutical measures, the vast majority of which have little or no effect on the heart. Many of these agents are not only given when rest has also been prescribed, but they are given when there is no heart failure, and only because the physician has detected some anomalous symptom. It is a matter of every-day experience to find individuals with a murmur or an irregularity, who for years have been subjected to treatment and made to visit health resorts for a condition which neither indicates heart failure in the present nor its subjected to treatment and made to visit heart failure did not arise has probably been attributed to the precautionary measures. From this comes the belief in the efficacy of many of the drugs and methods in use to-day. When many of these vaunted remedies are carefully investigated their uselessness becomes evident. Take, for instance, the present-day belief in the effect of strychnine on the heart, a belief held not only by a great many physicians, but which exercises an almost superstitious regard in the mind of many of our surgical brethren, in whom the faith is so deeply rooted that they will not undertake an operation without the preliminary ceremonial rite of a hypodermic injection of strychnine. The author asserts he has sought in vain for the slightest evidence of the effect of medicinal doses of strychnine upon the heart, and has searched the literature on the subject, and has not found one single reliable instance demonstrating the effects of medicinal doses. Pharmacologists have repeatedly examined with the minutest care the effects of medicinal doses of strychnine upon the heart in experiment, and have failed to obtain a result of any kind. So it is with a great many other drugs and methods, with the unfortunate result that the effects of drugs that are really of service are never properly appreciated.

We might not care so much for these erroneous beliefs were it not that they blind the profession to the great want of suitable agents in treating real and serious affections of the heart. There are many conditions in which rest alone fails to benefit the heart, as when the heart is invaded by a toxin, or rendered irritable from some lesion in the heart itself, or when the ventricle in heart-block contracts so seldom as to endanger life. For these and many other conditions we are absolutely without any means of meeting the impending and actual danger, and yet we are kept in ignorance of this fact, because writers pour forth a stream of remedies for any and every kind of heart trouble. Were we more alive to our own limitations, we should be more industrious in the search for real and valuable remedies.

TREATMENT IN DELIRIUM TREMENS.

After studying 1106 cases RANSON and SCOTT say that medicinal treatment of delirium tremens is much more effective in the first than in the second stage of the disease. Their results would indicate that incipient cases should receive large doses of the hypnotics, of which veronal is by far the best, whisky should be given regularly, and ergot administered at frequent intervals either by intramuscular injection or by mouth. Such medication should be discontinued gradually and only after all signs of restlessness and tremor have disappeared. The delirious patient should receive veronal in moderate doses—all other hypnotics, and especially morphine and hyoscine, should be withheld. Ergot should be given as in the incipient cases. So far as the delirious patients are concerned, their data do not give conclusive evidence whether or not whisky should be regularly employed.

THE USE OF SCOPOLAMINE-MORPHINE IN LABOR.

In the *British Medical Journal* of April 15, 1911, CORBETT reaches the following conclusions:

1. The scopolamine-morphine combination is of great value where hysteria and distress are manifest during the first stage of labor. If possible it should only be given in the first stage and not repeated.

2. No ill effects to the mother need be expected even with full and repeated doses.

3. No ill effects need be expected for the child, even where the mother has had full and repeated doses, provided that delivery does not take place at four hours or less from the time of the last dose, otherwise apnea will ensue. On the other hand, where the drug is without effect on the mother it is not likely to affect the child, even if born within four hours.

4. The cause of the apnea is probably the morphine, and so where it is necessary to give the drug late in the first stage, or early in the second, the morphine should not be given in larger doses than 1/16 grain, or omitted.

5. A hot bath is the best treatment for the apnea.

6. Strychnine may prove to be a useful addition to the mixture. It does not diminish the analgesic effect of the combined drug, and it may help to prevent the apnea in the child.

PUERPERAL SEPSIS: SOME CONSIDERATIONS ON ITS PREVENTION AND TREATMENT.

WHITEHOUSE writing on this subject in the *Birmingham Medical Review* of May 15, 1911, asserts that to obtain the very best results it is most essential to attack the disease at the earliest opportunity. Too often valuable time is lost at the commencement of infection, time that can never be regained; and when at last vaccines are employed they are but doomed to failure. To be of service a vaccine must be administered at the first possible moment, and before the microörganisms have multiplied to any great extent in the blood stream. During the last twelve months in hospital and private practice the writer has treated twelve cases of severe puerperal infection by the vaccine method, and the importance of early treatment has impressed him much. Nine of the patients recovered and three died. Of the latter, two came under observation only on the day before death occurred, and a vaccine was employed simply as a last resource. The third patient received her first dose of vaccine on the seventh day of the disease, and although a well-marked reaction followed each dose, active immunization failed to check a severe attack of pneumonia, which proved fatal on the twelfth day after treatment.

Of the cases that recovered, success was most marked in those patients to whom access was obtained at the commencement of the attack. The fall of temperature following the injection of vaccine for pyrexia of 103° or 104° on the third or fourth day of the puerperium was most remarkable. The uterus was explored in each case, and cultures taken from the secretion within its cavity. In all the fatal cases portions of decomposing placental tissue or blood-clot were found. In one only of those that recovered was such present, so that the fall of temperature in the latter cannot be due to removal of putrefying retained products. It cannot be denied, of course, that recovery might have taken place *sine* vaccine, but the fall in temperature that followed each successive dose provides some excuse for attributing the good results to this agent.

From his own experience the author recommends that a culture be taken from the uterine cavity at the first serious rise of temperature. By this means it is frequently possible to obtain a pure culture of the infecting organism, and to give the patient the opportunity of manufacturing opsonin, whilst her immunizing powers are still active. At a later stage in the disease it is usually found that a culture from the uterine secretions yields two or more different organisms, and it is impossible without a blood culture to know which is the

infecting germ. Should this culture prove sterile, one is forced to use a mixed vaccine prepared from the organisms in the uterine lochia. This then is a very cogent reason for making a bacteriological investigation as early in the case as possible. Cultures from the uterine cavity can be made without any great difficulty, and with extremely simple technique. All the apparatus required is a sterilized glass tube attached by rubber tubing to a glass syringe, such as is used for the injection of serum. The tube is usually slightly bent at a distance of 2 to 2½ inches from the distal extremity, in order to negotiate the normal anteflexion of the uterus. This, however, is hardly necessary in these cases, as the cervix generally is extremely patulous, and readily admits any tube of medium bore. The writer has frequently employed an ordinary female glass catheter attached by rubber tubing to a serum syringe, and has found it extremely useful in obtaining a sample of the infected lochia. A common method is to place the uterine tube in a piece of glass tubing of larger bore, and close the latter at each end by a plug of cotton-wool. The whole is sterilized by dry heat, and can then be kept until required. After suction of the uterine secretions into the uterine tube the ends of the latter are sealed, and it is kept until convenient to make a detailed bacteriological examination.

Uterine cultures may also be taken with a mounted swab of cotton-wool, as in the investigation of pharyngeal infections. This method, although inferior to the preceding, has the advantage of being extremely simple. It can be carried out by any practitioner, and the films and cultures so obtained may prove of inestimable value if secured at the beginning of a severe infection.

The first step in the bacteriological examination should be the preparation of a carefully stained film of the uterine secretion. In the early stages of an infection it is frequently possible to identify a few streptococci at once. Although not abundant, they are not obscured by the multitude of microörganisms seen in a film taken during a late stage in the disease. Should streptococci be found a stock vaccine must be administered at once. The ideal agent for treatment is, of course, an autogenous vaccine, but where such cannot be obtained, or where it is important that time be not lost, a stock preparation should be employed. A film preparation, therefore, will give the key to treatment several hours before a culture is available; and in severe infections every hour is of importance. For it is impossible to tell when a local lesion will become generalized, or, in other words, when organisms first reach the blood stream.

The dosage is a factor of some interest. As a general rule it may be stated that the more severe the lesion, the smaller should be the dose of vaccine, and *vice versa*. In the hands of the author small and frequent doses have given the best results. By these he means doses of five to six million organisms administered every other day. This applies especially to pure streptococcic or B. coli infections. Where a mixed vaccine is employed doses of ten to twenty millions have been used, and in one of the fatal cases where streptococci, B. coli, and an anaerobic bacillus were isolated, forty million mixed organisms were administered. The benefit accruing from the use of small doses is in accordance with the statement of Wright and others, that the resulting negative phase, or lowered resistance of the tissues, varies directly with the magnitude of the dose administered. The aim should be to produce a summation of phases with the minimum loss of power of the immunizing process.

The type of infection on the other hand has a distinct bearing upon the result of vaccine therapy, and in this respect the writer's experience agrees with the records of others. The best results are obtained with pure infections of staphylococci, B. coli, and streptococci, and in the order here stated. Mixed infections are less amenable to treatment, and the most dangerous combination is one of B. coli and streptococci. It must be remembered that the term "streptococcus" is now employed in

the generic sense only. It includes without doubt many distinct species, and upon this fact depends the success of autogenous as contrasted with heterogeneous vaccination. Several stains of streptococci that he has obtained from cases of puerperal sepsis conform in cultural characteristics to the type streptococcus fæcalis of Horder's classification. The prognosis in these cases is good when treatment is adopted early. On the other hand, in one of the fatal cases mentioned above streptococcus pyogenes longus was isolated. The fatal termination of this case is in accord with the bad prognosis usually given in cases of infection with this species of streptococcus.

In conclusion, one may summarize the present position of vaccine therapy in relation to puerperal sepsis as follows:

1. Vaccines have been shown to be a very real aid in the treatment of puerperal infection.

2. Treatment must be adopted during the earliest stage of the disease if the full value of the method is to be obtained.

3. Autogenous vaccines should be used whenever possible, but if any delay is experienced in obtaining the same a stock heterogeneous preparation should be administered at once.

4. The best results are obtained with pure infections. Mixed infections are beneficial, but the prognosis is not so favorable, especially if a combination of streptococci and B. coli is present.

5. The employment of vaccines during the later stages of the disease is useless. The failure in such cases only tends to throw discredit upon the method.

6. The dosage should be small, and repeated at frequent intervals. Large doses tend to depress the immunizing powers.

PUERPERAL INFECTIONS.

WATKINS in the *Southern California Practitioner* for May, 1911, tells us that in his belief the treatment is very largely systemic. The local treatment is very secondary to the systemic treatment. The treatment is very similar to the treatment generally used for tuberculosis, namely, to hasten an immunity. In the supportive treatment we pay most attention to three or four things. We believe that the patient obtains her strength—as we all do—more from food than from anything else. Much attention is also paid to hygiene; we give these patients all the outdoor air possible. As soon as she is able, the patient is taken to the roof and kept outside five or six hours a day, and given sun baths. As soon as these patients are gotten outside they take about twice as much food as when they are indoors. For diet they are given milk, eggs, meat juice, and anything nutritious that is easily digested.

There is a fixed rule that these patients get at least two quarts of liquid in twenty-four hours, and if that is not well tolerated by the stomach, it is given by enema. They have practically stopped the continuous saline and give it in half-pint or pint quantities. They do this because the patient is usually very much less disturbed when it is given in half-pint or pint quantities than when given the continuous saline, and the rectum does not become so sensitive. Unless great care is taken the continuous saline is liable to be given at too low a temperature. The enema is given with the bag as low as possible consistent with its running. Observation leads the author to believe that disturbances from enemata are very often due to the high pressure rather than to the fluid used. There is often nausea and vomiting when the enema is given with high pressure. If the patient is in a typhoid state, as she is sometimes, and the stomach unable to retain much fluid and the kidneys are not acting well, they often raise the foot of the bed and give a large amount of liquid by bowel. In those cases the stomach often responds to that treatment better than to any other. In very acute cases an ice-bag is placed over the abdomen. The value of this, however, is problematical.

The patient receives a large amount of rest. He sees to it that she sleeps six or eight hours a day. None of us feel well unless we get a large amount of sleep. We

know that the power of resistance is much greater in the morning than at night, probably as a result of sleep. These patients are given hypnotics or opiates sufficient to produce six or eight hours' daily sleep.

For cathartics, he usually uses enemas, generally salines. As regards medicine, they are giving very little. He has stopped almost entirely the use of ergot, which was very generally recommended a few years ago. The uterus, if not very septic, will contract itself, and if so septic that it will not contract, much cannot be expected from ergot; it often interferes with the taking of food. The same can be said of the use of alcohol. A few years ago the chief remedy in the treatment of infection was alcohol in some form, but it has been shown that the opsonic index is cut down by the use of alcohol. The clinician has found that such patients take less food when given alcohol, and it has been found, too, that it often interfered with rest and sleep. As a stimulant, Dr. J. L. Miller wrote a classical article some six months ago, in which he proved that alcohol is a very unreliable stimulant. It is a waste of time to discuss whether alcohol is a food or not when there are so many other things that we are certain are foods. Tonics are sometimes used to increase the appetite; stimulants are not used, as the patient needs rest, not action.

Watkins never makes vaginal or intrauterine examinations without positive indications. Abortion cases are frequently brought to the hospital with the fetus *in utero*. If the cervix is rigid and not much dilated, the uterus, cervix, and vagina are packed with gauze, and occasionally these patients are given small doses of ergot to bring on contractions. That gauze is left in position twenty-four to forty-eight hours. When removed it is often found that the uterus has emptied itself or that the cervix has sufficiently dilated so that the uterus can be easily emptied without traumatism. He has found such cases with a temperature of 105°, has packed them, and has found the temperature normal the next morning.

It may be said without criticism that the clinician has very much overestimated the dangers of retention of the fetus or placental tissue in the uterus after infection has taken place. If they remain, twenty-four to forty-eight hours is of very little importance. The inside of the uterus is never examined unless he is positive that something is retained. If the patient has hemorrhage, the uterus is explored. It means that there is some placental and decidual tissue that should be removed. If there is a very large amount of discharge, he sometimes explores the uterus with the finger, but never empties the uterus until it can be done without much traumatism. The presence of decomposed placental or decidual tissue is probably not as serious as some of us suppose. Watkins states he was brought up on a dairy farm, and remembers that among the animals placental tissue was often retained eight or ten days, and those animals never died. He remembers but one that died, and that was after the removal of the placenta.

It is interesting to recall that the most acutely sick puerperal women do not usually have retained placental or decidual tissue and do not have an offensive discharge. The offensive discharge cases usually recover. We may say that the cases with an offensive discharge are infected with putrefactive bacteria, which are not very virulent. This is true, and yet the putrefactive cases are often mixed with the more virulent bacteria. We do not know that the putrefactive bacteria do very much harm. It is possible that they help to destroy the other bacteria.

The uterus is never curetted, and it seems from what we know of modern pathology that there can be no logical excuse for curetting a septic uterus; and yet it is a very common practice, and one observes in the literature that it is still advised. The Germans some years ago emphasized the importance of not scraping away the protective leucocyte wall from the uterine cavity. In a puerperal uterus thrombi always form in the sinuses, and we know that blood-clots are good soil for bacterial growth. When one curettes he is very apt

to dislodge those septic thrombi and thus get an embolic infection.

The question of curetting a septic uterus is one of the worst habits, according to the author, that has been handed down in the treatment of puerperal infections. No surgeon would scrape off an infected, suppurating wound in the hand with a sharp instrument. He would put on a wet dressing and remove any dead tissue which could be done without much traumatism. That is intelligent surgery. The surgeon keeps on a moist boric acid, sterile water, or normal saline dressing. The uterus always has this wet saline dressing, as it is constantly bathed in an autogenous saline serum solution.

Many of these cases have an inflammatory exudate in one broad ligament or the other, sometimes in both, or in the cul-de-sac, and it at times extends to the umbilicus. With these patients their treatment is about the same—it is largely supportive. The writer asserts, without his figures before him, that of eighty cases under observation, some thirty had an intraperitoneal exudate, and in practically all of those cases the exudate disappeared under supportive treatment. He found that the exudate usually remained about the same size as long as the patient had fever, and as soon as the fever disappeared the exudate was rapidly absorbed.

STUDIES ON WATER-DRINKING.

HATTREM and HAWK in the *Archives of Internal Medicine* of May 15, 1911, reach the following conclusions in regard to intestinal putrefaction during copious and moderate water-drinking with meals:

1. The drinking of copious (1000 Cc.) or moderate (500 Cc.) volumes of water with meals decreased intestinal putrefaction as measured by the urinary indican output.

2. Copious water-drinking caused a more pronounced lessening of the putrefactive processes than did the moderate water-drinking.

3. In copious water-drinking the total ethereal sulphate output was increased coincidentally with the decrease in the indican output. This observation furnishes strong evidence in favor of the view that indican has an origin different from that of the other ethereal sulphates, and that they cannot correctly be considered as indexes of the same metabolic process.

4. When Ellinger's method is employed, the determination of indican should be made on fresh urine before any preservative has been introduced. Especially is this true when thymol is used as the preservative.

5. The decreased intestinal putrefaction brought about through the ingestion of moderate or copious quantities of water at meal-time is probably due to a diminution of the activity of indol-forming bacteria following the accelerated absorption of the products of protein digestion, and the massage of excessive amounts of strongly acid chyme into the intestine.

THE RADIUM TREATMENT OF CANCER.

FINZI in the *Lancet* of May 20, 1911, expresses the following views:

1. In cases which would otherwise be doomed, complete local disappearance of the growth occurs in 12 per cent, relief of pain or other symptoms in 62 per cent, and no relief in 25 per cent.

2. These statistics would be improved if cases were excluded which were treated for relief only.

3. Every local inoperable growth of suitable type should be treated with radium.

4. Prophylactic treatment should be used after every operation for cancer.

5. Ten per cent of successes means 90 per cent of ultimate failures or partial failures, and therefore no judgment can be formed in small numbers of cases as to final results.

6. It is necessary to use large quantities of radium and metal filters at least 1½ millimeters thick of lead or platinum. The author asserts since he has used 205 mg. of radium in his later cases his results are

showing promise of being very much better than when he used only 50 mg.

7. Treatment must be thorough.

THE EFFICIENCY OF BLOODLETTING.

ROBINSON, in the *Medical Times* of June, 1911, says that when he was a student in Paris forty or more years ago, bleeding by venesection, leeches, or cut cups was a daily routine in hospital wards for a variety of ailments, and in very many instances it was of unquestioned and great value. He knows of nothing in beginning otitis with great pain, in acute pleuritis, in pneumonia, in appendicitis, etc., of more use than the application locally of a few leeches. Frequently they diminish, or neutralize, acute, severe pain as nothing else will. Frequently, also, they abort, as he believes, inflammatory disease in a way that nothing else will—and even when the course of the disease is not arrested, they do no harm, certainly not nearly so much as the internal use of some drug new to us, and only desirable and vaunted because new, and destined very soon to disappear and no more be heard of. Witness what we now know and believe of acetanilide, and others of like ilk, so pernicious, or valueless, that they are now dropped by or out of sight of intelligent practitioners.

There are times when leeches, or cut cups, do not take the place of venesection. In a distended, rapidly failing right heart from pneumonia, or other cause in uremic convulsions, in cerebral hemorrhage with pulse of high tension, in cerebral congestion, acute and imminent, bleeding from the arm is imperative. The leech is too slow in some such cases. Moreover, we must apply six or more to get the amount of blood we require, and that may be objectionable. But in other instances, and they are very many, the timely application of a few leeches will save many a life, otherwise surely doomed, and there is no drug or local agent which can take their place successfully.

To be useful in highest degree, the wound must continue to bleed after the leech has dropped off, and to promote the bleeding, warm, moist applications of compresses, or flannels, soaked in warm water and wrung out, must be applied frequently for fifteen or twenty minutes, or even longer. It is this slow, prolonged bloodletting of the leech which is most desirable, and in twenty-four hours the loss of blood will often be replaced, but with blood of a better quality or composition. The author asserts he earnestly trusts that these words of his may be heeded and the instruction practically applied.

TREATMENT OF SCIATICA BY SALINE INJECTIONS.

In the *Glasgow Medical Journal* for April, 1911, HAY reports a series of cases conducted by this method and says in conclusion that if to the ten cases narrated are added the four previously reported and subtract the cases of pelvic tumor and malaria, we find that of twelve cases treated eight were cured, one was made worse, and three were lost sight of.

With regard to the technique of the injection, the writer now injects at the sciatic foramen or at the gluteal fold, according as pressure causes greater pain at the one point or the other. To find the foramen, he draws imaginary straight lines from the posterior superior iliac spine to the tip of the great trochanter and to the middle of the ischial tuberosity, bisects the angle contained by these lines, and measures 2 1/2 inches along the bisecting line. At the gluteal fold the nerve lies midway between the trochanter and the tuberosity. To ascertain whether the needle has penetrated into the nerve, he presses the plunger of the syringe gently so as to expel a few drops of the solution. If the needle is in the nerve the patient experiences a sensation as if something were trickling down within the leg to a variable distance, sometimes only to the middle of the thigh, sometimes as far as the heel.

In evidence of the permanence of the cure he exhibited a man whom he injected eleven years ago. For several years before

he was treated, he was confined to the house with sciatica every winter for periods varying from a few days to many weeks. Since he was treated he tells the writer he has never lost a day's work. His case is of interest for another reason. Lange, of Leipsic, was the first to publish the results of saline injections in sciatica, and is therefore justly entitled to claim priority. His first case was injected in July, 1902—that is, two and a half years after a case had been successfully treated in Glasgow.

DEATH FOLLOWING TREATMENT BY SALVARSAN.

MORATA (*Revista de Medicina y Cirujica Prácticas*, Feb. 28, 1911) reports the following case:

A bachelor, aged twenty-one, suffered from hard chancre, adenitis, and roseola two years before, when he was advised to have mercurial inunction, but did not receive the treatment. He sought Morata's advice for the first time a year ago. The patient was a pale, slight man, with syphilitic plaques on the tongue, lips, and pharynx, a diffused papular exanthem, and severe enlarged glands. He was ordered biniodide of mercury injections, which were badly borne, and subsequently injections of 40-per-cent gray oil. He was lost sight of till the end of January last, when he again consulted Morata. During the autumn he had been under the care of a distinguished specialist, who had treated him with injections of calomel. On re-examination, the glands of the neck, especially those of the posterior triangle and the jugular area, were found to be much enlarged; the plaques in the mouth quite evident. Weight 43 kilos. No albuminuria. No lesion could be detected in the heart or lungs. He begged to be given "606," and having obtained the consent of his parents, Morata injected him at 3 P.M. on January 31. Forty centigrammes of "606" were first dissolved in serum, then neutralized with 15-per-cent caustic soda and diluted with 200 grammes of normal saline solution (9 per 1000). The equipment used consisted of a wide-mouthed funnel, a rubber tube, and a needle, all well boiled. The needle entered the vein at the first attempt, and the drug was not introduced until it had been seen that some warm saline passed freely into the vein. This was the nineteenth case which Morata had treated with salvarsan. Three hours after injection, vomiting, diarrhea, and sweats supervened. The vomited matter was greenish and at times mingled with dark blood, the diarrhea abundant and frequent, perspiration copious, and palpitation violent. The lips were violet, the tongue chocolate-hued and dry, the aspect very pale, temperature 36° C., radial pulse almost imperceptible. The patient, who was very restless, complained of a fluttering sensation in the abdomen. Between 3 P.M., when he was injected, and 8 P.M. he passed water several times, though a specimen could not be collected as the urine was mixed with feces. After 8 P.M. on that day (January 31), until 6 P.M. on February 2, when he died, the patient did not pass a single drop of urine, and the bladder was entirely empty. The notes continue:

"February 1, A.M. General condition the same as yesterday; temperature 36° C; radial pulse imperceptible; vomiting and diarrhea ceased; thirst and restlessness increased. 3 P.M.: Condition unchanged; temperature 35.8° C. 11 P.M.: Very cold; thirst intense; neither vomiting nor diarrhea; urine suppressed; very restless; pulse still imperceptible; heart's action heaving.

"February 2, 8 A.M. Condition unchanged, except for increased restlessness; color of the lips from violet becomes red. 1 P.M.: Began to be delirious; heart's action almost imperceptible; temperature 36° C. 3 P.M.: Very cold; bowels still unmoved; raging thirst; wild delirium. 5 P.M.: The death struggle began, and at 6 o'clock he died in a state of coma."

From the above notes it may be concluded that anuria was the salient symptom in this case, and that this was caused by the influence of the salvarsan, which produced congestion and swelling of the renal epithelium, depriving it of its function and

causing it, in its swollen condition, to block the canalicular lumen. The writer adds that, notwithstanding this experience, he will continue to employ salvarsan. He insists, however, that the drug should always be given in emulsion and intramuscularly, as thus it is more slowly absorbed. Moreover, this method permits us, on the first appearance of symptoms of arsenical poisoning, to cut down over the injected area and to wash out the site of the injection, which is the only antidote we have against arsenical poisoning.—*British Medical Journal*, May 6, 1911.

THE PRESENT STATUS OF THERAPEUTICS OF SALVARSAN.

MELTZER in the *Journal of the American Medical Association* of June 10, 1911, gives an illuminating discussion of this question.

When we turn our attention to human diseases which are caused by spirilla, we find in the first place that in relapsing fever one intravenous injection of salvarsan is sufficient to destroy completely all the spirilla and rapidly to cure the patient. This shows that the facts which were derived from animal experimentation hold good also for the human species, at least in such cases as relapsing fever, in which the blood is the main abode of the spirilla. It may be mentioned here that cases of filaria also seemed to have been cured by an intravenous injection of salvarsan. The problem, however, becomes complex when we come to judge the effect of salvarsan on human syphilis, for which we possess now quite a large literature. Not the least complicating element is the fact that a good many of the clinical writers on the subject are not sufficiently well trained in the methods of critical scientific observation. Another very disturbing element is the great bias of some of the authors. How else can the astounding facts be explained when one syphilologist states that he gave up the remedy after using it only in a few cases because of its comparative uselessness and of the harm it does to the central nervous system, while his colleague at the same institution reports with great enthusiasm of the wonderful effect of the remedy in fourteen hundred cases of all forms of syphilis with comparatively little by-effects? Is it not further an evidence of glaring bias to ascribe an optic neuritis to the single injection of salvarsan and to leave out of consideration the effects of enesol and arsacetin, with which the patient was treated previously to the salvarsan injection—especially of arsacetin, the damaging effect of which on the optic nerve is an established fact?

Besides the complexities emanating from personal factors, we deal in human syphilis with a chronic disease. In some instances the spirochætæ are undoubtedly enclosed, at least temporarily, in tissues which for the time being cannot be penetrated by the salvarsan solution. Furthermore, the method of administration of salvarsan is still in an unsettled state; it is insufficiently absorbed from some subcutaneous or intramuscular injections, and it is too rapidly eliminated when it is injected intravenously.

In spite of all these difficulties, however, the great mass of accumulated evidence establishes beyond a doubt that in human syphilis salvarsan acts in the same specific manner as in the experiments on animals—that is, it destroys the cause of the disease. The following clinical results are undisputed facts:

It was found that with but few exceptions an injection of this drug causes disappearance of all accessible spirochætæ. There are already a considerable number of cases on record in which an early injection has prevented so far the development of secondary manifestations, the time elapsed being in some cases seven or eight months. Syphilitic manifestations of nearly all forms and in all stages were profoundly affected by a single injection; there were only a few exceptions to this rule. There are a good many cases in which all the external manifestations disappeared without recurrence so far. These facts are surely sufficient to show that salvarsan acts on human syphilis in a definitely specific manner—that is, it destroys the cause of the disease. Its action is at least as specific as that of mercury

on the same disease. It differs from mercury and has some advantages over it in the following points: Salvarsan destroys all spirilla; mercury affects only the spirochætæ of syphilis. Salvarsan apparently produces antibodies in the blood, as is shown by the effectiveness of the serum and the milk of those who were injected with it; there is no evidence of the formation of antibodies by mercury. The effect of salvarsan is much more rapid than that of mercury; one injection of salvarsan accomplishes in two weeks as much as repeated injections of mercury accomplish in six weeks. Finally, whereas mercury is inimical not only to the parasite, but also to the host, causing cachexia of the patient, salvarsan, reversely, acts rather favorably toward the host; it stimulates to rapid healing and causes an increase of the weight of the patient. Careful future studies will bring to light many further quantitative and qualitative differences between the actions of the two specifics in which they may compete or they may supplement each other. This desirable end, however, can be brought about only by an unbiased, judicial, and scientific attitude toward the merits and demerits of either of the specific remedies.

Here it must be acknowledged that one of the original important expectations regarding the actions of salvarsan has not been realized in human syphilis. While in the animal experiments one injection cured the disease permanently, this has not been the rule in the treatment of human syphilis, especially when the treatment is begun after the onset of the secondary manifestations. In a good many instances the syphilitic symptoms reappeared even after repeated injections of salvarsan. While it seems that relapses occur less frequently after intravenous injections and become strikingly less extensive and less frequent with the repetition of the injections, the fact remains true that in many instances the syphilitic human body cannot be sterilized with one injection. This fact would have had to be put down as a very serious drawback in the treatment of syphilis by salvarsan, on account of the possibility of the gradual development of resistant strains of spirochætæ. Fortunately it has been recently discovered by Margulies, in Ehrlich's institute, that, in contrast to arsacetin and arsenophenylglycin, salvarsan does not produce strains of spirilla resistant to it. This important observation finds its confirmation in recent clinical experience. The third and fourth injections of salvarsan affect the syphilitic manifestations with the same promptness as the first injection. This fact is very significant; it takes away the motive for the aim to destroy all the parasites with one injection, and it may lead to important changes in the method of administration of salvarsan.

On the basis of the foregoing considerations the author has recently advocated, instead of the use of one large dose, the injection for some time at regular intervals of small doses of salvarsan in very dilute solutions into the lumbar muscles. By this method it may be possible to prevent local and general by-effects as well as relapses. The method offers the further advantage that it could be used by the general practitioner.

SOME ASPECTS OF FUNCTIONAL DERANGEMENTS OF THE NERVOUS SYSTEM.

RENNIE in the *British Medical Journal* of May 13, 1911, remarks that when we come to the question of treatment of functional nerve disease, we have to consider first of all the indications for treatment, which are presented by a consideration of their etiology. The author refers in his paper to the influence of suggestion, either from outsiders or from the patients themselves, in the production of functional symptoms. This shows us how necessary it is to avoid saying anything before the patient which could be interpreted by him as an unfavorable suggestion, and to remember the extremely important part played by suggestive therapeutics in the treatment of functional nerve disease. Bearing in mind, further, the part which is played by heredity in the production of

these maladies, we must use our influence as far as possible in preventing the marriage of hysterical or neurasthenic patients. For not only is there great risk of the offspring inheriting some form of nervous weakness, but the effect upon the patients themselves is often extremely unfavorable. It is important to emphasize this point, because one frequently hears that marriage has been advised as a means of cure in hysterical patients. We can also do a great deal of good in warning patients who are given to various excesses, or who are overworking themselves mentally without taking sufficient rest and physical exercise, of the danger they are running of inducing a condition of neurasthenia from which recovery may only be secured after prolonged rest and treatment. We must also remove our patients from the care of sympathizing relatives and friends, because we know that such an environment only tends to aggravate the symptoms, and we must guard our neurasthenic patients as far as possible from business worries and anxieties, and secure for them rest and quiet in hygienic surroundings.

Bearing in mind that the pathological condition underlying hysteria is a disturbance of the mental functions of the nervous system, our attention must be directed specially toward this aspect of nervous activity. We endeavor to improve the physical condition of the nervous system by physical measures and the mental state by what we might call mental measures. To this end we put the patient to bed with plenty of fresh, pure air and give abundance of nourishment—especially large quantities of milk—and we employ massage to improve the circulation, to aid the digestion, to secure the removal of effete products, and favor healthy muscular metabolism. The mental measures we adopt include the removal of the patient from surroundings which tend to intensify her symptoms. We should not allow the patient to see her friends, to write or receive letters, or to read books calculated to arouse the emotions, and by constant suggestion and kindly reasoning endeavor to lead the patient on to a condition of emotional control and to a healthier conception of what she owes to herself and to her relatives. It is often a powerful aid to the patient reaching this state if we can offer some reward in the form of a visit from a friend or the receipt of a letter if she succeeds in causing some special symptom to disappear. To carry out this treatment demands often great patience and perseverance on the part of both doctor and nurse, as well as great firmness to resist the entreaties of the patient and her friends. But fortunately the efforts thus made are often crowned with success, the patient is relieved of her various symptoms, and is restored to a healthy state of mind.

The indications for treatment from a review of the pathology of neurasthenia are somewhat different from those we have just considered in hysteria. While the mental symptoms are still prominent we do not find it necessary to adopt the isolation treatment. A mistake is very often made in advising neurasthenic patients to start off on a sea voyage before any attempt has been made to improve their physical condition. It is quite true that a change of scene and surroundings, combined with relief from work, is very beneficial in diverting the patient's thoughts from himself and restoring him to a healthier frame of mind. But we have to remember that a neurasthenic is not only jaded in mind and body, and unable to stand the strain of traveling, or to take an interest in sightseeing, but he is also suffering from digestive derangements and sleeplessness, and these latter conditions are often aggravated by traveling. The writer states he has seen this so often that he is satisfied that we do best for our patients if we first of all put them to bed in the fresh air with quiet and rest, relieve their digestive disturbance by appropriate dieting, secure the free action of the bowels, favor elimination by the skin by warm baths and massaging. We can also improve the state of nutrition of the nervous system by securing oral sepsis, by the use of intestinal antiseptics, and by the use of tonics—especially the glycerophosphates and the hypophosphites. After a month or

so of this treatment one finds that the patient is much improved physically, and able to profit very considerably by a voyage or by a stay in some health resort.

Special symptoms may require special treatment as they arise, and the writer utters a note of warning in conclusion to be most guarded in prescribing sedative drugs —for example, opium, morphine, or heroin —without very careful consideration, owing to the great tendency there is for patients to contract drug habits. In fact, the less we depend on drugs, and the more we adopt general hygienic treatment, the greater the amount of good we shall do for patients suffering from the various forms of functional derangement of the nervous system.

HEXAMETHYLENAMIN: A REMEDY FOR COMMON COLDS.

In the *Journal of the American Medical Association* of June 10, 1911, MILLER recalls the fact that acute infections of the upper respiratory tract, whether manifested as coryza, acute rhinitis, pharyngitis, or tracheobronchitis, are of the commonest incidence. A "cold," the grippe, influenza nostras, catarrhal fever, acute bronchitis, are common terms used to designate such attacks. The infectious nature of the disease is almost universally accepted, although the identity of the infecting agent is not established. Walter's investigations are of practical interest. He shows that the bacillus segmentosus of Cautley and the micrococcus catarrhalis are probably sometimes causative of acute rhinitis and infections of the middle ear and accessory nasal sinuses.

A cold may cause as much suffering and incapacity as many diseases considered more serious. Often the illness is prolonged from the usual few days to ten days or two weeks. These infections are only too frequently the starting-point of complications that are a lifelong menace to well-being. Among such complications and sequelæ are a predisposition to repeated attacks, a tendency to "catch cold" easily, suppurations of the accessory nasal sinuses, otitis media, hypertrophied and chronically inflamed tonsils, adenoids, etc.

The diversity of treatment of colds is common knowledge; doctor and layman alike prescribe hot drinks, foot-baths, sweats, quinine, coal-tar antipyretics, Dover's powder, whisky, and so on. And some as wisely prescribe time, since the disease is self-limited, and a recovery is the rule after a period of greater or less discomfort.

In view of the reported excretion of hexamethylenamin in the saliva, and by the middle ear and bronchial mucous membrane, the author states he has been for the past year prescribing it for common colds.

In most cases it acts promptly and efficiently. The irritating, watery secretion of coryza stops; the fever, aching, and malaise of influenza cease; the threatening disease is averted.

Hexamethylenamin should be administered at the earliest possible moment; that is, when the nose begins to feel stuffy or the discomfort begins—"when the cold is being caught." Its use after the infection has existed for several days is less gratifying, possibly on account of the mixed infection at that time with pus organisms.

As to the dosage, it seems necessary that a larger amount must be given to obtain antiseptic results in the gall-bladder, subarachnoid space, or on the nasal mucous membrane than is required as an antiseptic in the urinary tract. The findings of Crowe seemed to indicate that 75 grains a day must be given in order to obtain quickly the desired effect in the gall-bladder. At the onset of a cold the following prescription, which makes the dose 15 grains four times in twenty-four hours, is efficient:

> Hexamethylenamin, gm. 12, or ʒiij.
>
> Div. in chart. No. xii. Sig.: One powder to be taken in a goblet of cold water four times daily.

Copious water-drinking is encouraged, which lessens the possibility of bladder irritation. This latter is the only ill effect of the drug, but it occurs only occasionally and ceases at once when the medicine is dis-

continued. As a cure for colds it may be as great a boon as it has been proved to be as a urinary antiseptic.

RADIUM IN MALIGNANT DISEASE.

The claim of radium to be in any sense a panacea in malignant disease did not emerge very successfully out of the discussion on this subject at the Roentgen Society. Mr. C. W. Mansell Moullin, in an opening paper, spoke of it in the most reserved terms. He denied that radium had a cumulative action. A second exposure was more destructive than the first, not because the influence of the radium was cumulative, but because the resistance of the tissues had been lowered, and they had not had time to recover. Nor would he admit a selective action on the part of radium. As to the indications for radium therapy, he thought there was no inconsiderable degree of danger in treating any but small and superficial growths with the small quantities of radium at present at our disposal. Excepting rodent ulcer, radium should be reserved for cases either inoperable or inaccessible to ordinary methods, and even in rodent ulcer he had known radium to fail completely. Leaving on one side all questions as to size and depth of tumors, the facts that seemed to weigh most in determining the clinical value of radium were slowness of growth and mildness of malignancy.

Mr. Mackenzie Davidson was even more emphatic in expressing his distrust of radium in malignant disease. He had never seen a malignant growth of any considerable extent which had been cured by radium. The immediate effect was often remarkable, but there was recurrence. He agreed with Mr. Mansell Moullin in deprecating the desire on the part of the ignorant public to "try radium." By "trying radium" some patients had ended their existence a little sooner than they would otherwise have done. In ophthalmic surgery radium had the greatest value. In every case of the hitherto incurable "spring catarrh" that he had treated he had found the most satisfactory result. Although most cases of rodent ulcer got well, he had known some in which radium had failed, and one at least in which it had "fanned the flame."

Dr. Horace Manders found that the use of adrenalin before an application of radium was a great advantage; the success of the treatment coincided to a great extent with its use, and he thought it worth while taking into account in connection with the possibly unfavorable effect of hyperemia in radium therapy.

Radium had a defender in Dr. N. S. Finzi, who stated that he had been working with more than 20 centigrammes, although he did not consider even this amount to be large enough, and looked forward to working with grammes instead of centigrammes —as his stock of radium had increased so had the success of his treatment. The second 50 of his 120 cases had yielded better results than the first, and the last 20 better still. These 120 cases were cases of inoperable malignant disease, and out of 90 in which treatment was finished, he had 10 in which the growth completely disappeared, but in 3 of these 10 there had been recurrence. In 1 of the remaining 7 the cure had lasted for more than two years.— *British Medical Journal*, May 13, 1911.

PRACTICAL TREATMENT OF NERVOUS PEOPLE.

MacPhee under this somewhat unusual but very practical title writes in the *New York Medical Journal* of June 3, 1911. As he well says, every rational plan of treatment will include intelligent supervision of diet, regulation of exercises and diversions, and rest. The best exercise is walking in the open, the best diversion is agreeable occupation and pleasant pastimes, the best diet is what agrees with and nourishes, and the best rest is freedom from responsibilities and annoyances and enough normal sleep. Stimulants are usually, but not necessarily, excluded. One must adapt one's directions to the requirements of his patient, and when there are no contraindica-

tions, one should not withhold a cup of coffee in the morning, a glass of wine or beer with dinner, or a cigar in the evening because theorists do not approve of them. Ordinarily, when the digestive functions are not much impaired, rigid restrictions in diet are not necessary; but in advanced types with extreme exhaustion and inadequate vegetative functions, complete rest in bed and scrupulous attention to diet become imperative. Massage is then substituted for active exercise, and mental diversion must be provided by attendants. In connection with diet one has to consider constipation, which is a common condition in these patients. Foods that favor intestinal peristalsis, by leaving enough residue to overcome the intestinal lethargy, should supplant the use of laxatives, but the latter are necessary in the beginning of treatment. On the other hand, one may be troubled by a treacherous diarrhea suddenly developing on the eve of some important event or undertaking that causes mental agitation and anxiety. Rest and composure will relieve it, but a dose of castor oil may be needed in intestinal fermentation.

While the administration of drugs in the treatment of these disorders has been replaced, to some extent, by other scientific measures, there still remains an unavoidable demand for their employment. One sees occasionally statements purporting to come from good authority that their usefulness has gone by and that people can be treated successfully without them. Those who have had to combat the mischievous prejudices disseminated among people by irregular practitioners know the danger of such unqualified announcements. Drugs are necessary. There are many cases we can manage without them, but in most instances we can do better with them, and in some cases they are absolutely essential. Obstinate insomnia, for instance, will not yield without the temporary use of hypnotics, and severe headaches and neuralgias require analgesics to relieve them. In depressed mental states, with apprehension and irrepressible restlessness, bromides and the denarcotized preparations of opium do good. Tonics and aids to digestion, as well as calomel and castor oil and the cholagogue salts, are often indispensable. There may be some danger, if one is not cautious, that hypnotics and opiates produce a habit in susceptible persons, but as a rule they are taken without anxiety and stopped without difficulty. Persistent cases in patients with a rebellious temperament and stubborn disposition, or where the circumstances are unfavorable, may need them for a considerable time, but ordinarily they can be discontinued after a few weeks of treatment. Occasionally one finds that patients become dependent upon them and will buy them in the shops if they know what they have been taking; but this is a rare occurrence and should not prevent their use when conditions demand. Because of the length of the author's paper he is unable to more than mention the importance of electricity, hydrotherapy, and physical exercises for the correction of disordered muscular functions.

Psychotherapy may be said to have its special field of usefulness in the treatment of nervous people. It is an important element in the therapeutics of every illness, but in functional disorders of the mind and nervous system it gained its reputation and its notoriety. It has been the foil of the impostor and the refuge of the psychic healer, and has won its widest publicity through abnormal and dishonest ways of using it. Among its most conspicuous advocates are those who suspend the normal consciousness of their patients to administer it, and certain idealists who have made it an article of faith in their social organizations. There is a mysticism attached to it, when practiced in this way, that wins steadfast supporters among credulous people, and the fact that it sometimes brings relief without voluntary effort by the patient adds to its popularity with persons who like to be indulged. The latest addition to the subjective methods of treatment is what is called psychoanalysis. Suggestion, as we know, aims to dispel symptoms by putting opposing ideas into the patient's mind while under hypnotic influence, but

psychoanalysis probes the memory for the pathogenic idea that caused them, brings it back into consciousness, and banishes it forthwith. The theory upon which it is based is both ingenious and elaborate, but not convincing. Like all new things in medicine it has its adherents, and there are some experienced neurologists who think it has value. It is not practical, and the author does not believe it is commendable. The illogical thing in all these subjective methods of treatment is that they pretend to strengthen the self-control of patients by temporarily suspending their will-power and approaching them through their instincts and credulity. It is admitted that repeated hypnosis weakens the resistance of the will, and therefore every treatment given under its influence must lessen intellectual control.

Placebos and subterfuges, such as giving baking soda instead of hypnotics, and sugar of milk to relieve pain, and various tricks of that sort, may work once in a while, but as a rule they are detected and do harm instead of good. If you arouse a suspicion that you are not absolutely candid in everything you say and do your patients will not trust you, and, furthermore, many of them are annoyed by any measure that casts a doubt upon the reality of their sufferings. They may appreciate a joke at another's expense, but they seldom like to be included in one themselves. A genuine sense of humor in your patient will enable you to overcome many troublesome obstacles, but, unfortunately, it is a quality seldom met with in a psychopathic individual.

PREGNANCY AND DISEASES OF THE EYE.

In closing an article on this topic in the *New York Medical Journal* of June 3, 1911, SHUTE sums up his views as follows:

1. Albuminuric retinitis may exist for weeks, and even months, without pregnant women complaining of impairment of vision.

2. The retinitis can exist for some time independently of, as well as in association with, symptoms of renal disease; also independently of, as well as in association with, albuminuria.

3. The presence of this retinal inflammation indicates a far-advanced condition of the toxemia of pregnancy, or of that manifestation of toxemia known as the kidney of pregnancy.

4. The presence of this disease, in a larger number of cases than is realized, indicates a very grave prognosis as to the life of the patient, for the kidney of pregnancy may be followed by chronic interstitial nephritis.

5. As long as the albuminuric retinitis lasts there is danger of vision being irretrievably ruined at any moment and in any month.

6. The ophthalmoscope is the only means by which the earlier and relatively much less serious stages of toxemic retinal involvement can be detected; also it is the only means by which we may know that albuminuric retinitis even exists.

7. Should the earlier stages of retinal involvement be detected, as they can, by the use of the ophthalmoscope, such remedial procedures can be adopted as may prevent the development of so sinister a disease as albuminuric retinitis; and, also, the necessity of inducing premature labor, in order to safeguard vision, may be obviated.

8. When urinalyses are negative, pathological arterial tension and pathological leucocytosis when present are invaluable symptoms of the toxemia of pregnancy. If increased arterial tension is persistent, as indicated by an abnormally accentuated second sound of the heart in association with a tense and wiry pulse, or as revealed by the sphygmomanometer, an ophthalmoscopic examination of the eyes ought by all means to be made at stated intervals.

9. It is as much the duty of the obstetrician to be practically familiar with the use of the ophthalmoscope as it is that of the neurologist.

10. If the obstetrician cannot use the ophthalmoscope, both his own and his patient's welfare will be promoted by having the coöperation of the ophthalmologist,

when there is persistent increased arterial tension, or albuminuria, in a pregnant woman.

LESIONS OF THE SACROILIAC SYNCHONDROSIS—A CLINICAL STUDY.

DUNLOP in discussing this state in the *Virginia Medical Monthly* for May, 1911, says that the first thing to be considered is a means of fixation for the pelvic articulations, for the symphysis pubis at times requires quite as much attention as the sacroiliac joints. To get proper fixation by any method whatever requires experience. The author states he has found that the individuality of each case is no more vividly demonstrated than in sacroiliac lesions. If fixation does not give sufficient relief, then we must consider the possibility of a dislocation, and reduction must be made under complete anesthesia, as entire relaxation is required. The after-treatment is much the same as in the uncomplicated case.

The patient must next be put in the best hygienic surroundings which it is possible to obtain, with special reference to the proper regulation of the bowels. Medication will consist of a tonic to get things started properly, but further there is rarely a drug required. Indeed, it is often the case that these individuals have been so maltreated by the use of drugs, especially the antirheumatic group, that it is a great relief to be freed from them. Frequently the digestion has been put *hors de combat* by their use.

It is of the greatest importance for a cure of such conditions to have the muscles and ligaments restored as nearly as possible to the normal. This can be done in numerous ways, a few of which are here enumerated: (1) Graduated exercises under most careful medical supervision. (2) General and local massage, manual or mechanical. (3) Hydrotherapy, especially local to the spine and buttock. (4) Electricity. The patient should not be allowed to carry these out without supervision.

There are three important points in the treatment to be remembered: (1) Do not give up the diagnosis if the patient does not yield to treatment immediately. (2) Be persistent in following up the treatment and see that the patient wears the apparatus properly and for a sufficient time, and that precautions have been taken toward developing the muscular and ligamentous tissues so that they may properly perform their duties. (3) See that the patient so clearly understands the malady that he or she may use the proper precautions to prevent its recurrence.

SQUINT AND ITS TREATMENT.

Writing in the *Birmingham Medical Review* for May, 1911, HIRD says there are three essentials in the treatment of squint:

1. Preservation of the sight in the squinting eye. This is brought about by correcting the refraction and educating the form sense in the squinting eye.

2. Fusion training to obtain binocular vision.

3. Straightening the visual axes when required by means of operation.

The author considers these in detail. For correction of the refraction the patient must be put fully under the influence of a reliable cycloplegic, and atropine is the drug preferred by most. He always orders the ointment in children, of one-per-cent strength, to be used three times a day for three days. It is necessary to fully explain to the parent the method of application, so that it is applied to the surface of the eyeball of each eye. The child is then refracted, and full correction, less 50 D., is ordered to be worn constantly. The glasses must be made to fit well, and the glass should be almost circular. No child with squint is too young to wear glasses. The angle of deviation should be measured with the glasses on for future reference.

The education of the squinting eye will depend on the amount of defect in vision. The worst cases are those in which fixation is lost. In such cases, or where vision is poor, viz., not better than 6/36, the best thing to do is to cover the good eye with a pad of wool, kept in position by means of some sticking plaster. It is better than a shade, for the child can displace that, and

will be tempted to do so in the early stages. The spectacles are worn, and this is kept up continuously. After a preliminary awkwardness the child soon begins to improve, and must be encouraged to try to recognize things and read large print. Later on, when vision has improved a good deal, the good eye may be put under the influence of atropine, so that it can only be used for distant vision, the squinting eye being used for seeing near objects and reading. The author states he could give many examples of the excellent results of education, and it is now universally recognized. The rapidity of improvement is sometimes quite astonishing, and the parents usually take a lively interest in the matter.

Having corrected the refraction and obtained good vision in the squinting eye by education, when necessary, we have next to teach the child to fuse the two retinal images to get binocular vision. Worth maintains that this is only possible in the young, so that early treatment is very important if this is to be obtained. He has invented an instrument called an amblyoscope for training fusion, and it is probably the best apparatus existing for that purpose. By means of it we get the child to see two separate images, one with each eye, and then, by approximating them, teach the child to fuse them into one. The pictures are made sufficiently interesting to attract the child's attention. Of course it requires a good deal of pains and time, but it should be worth it, for the value of stereoscopic vision requires no further comment. Time does not allow the writer to go into more detail with regard to this fusion training.

The last important point is to put the visual axes straight. The writer has said something of the choice of operation. It can often be done under cocaine without the use of a general anesthetic. It is not his intention to go into the technique of the different operations. He simply says that operative interference is not the first, but often the last, stage in the treatment of squint. At the same time it must not be delayed too long. True binocular vision demands parallel axes.

THE ACTION OF SALVARSAN UPON THE WASSERMANN REACTION.

Fox in the *Boston Medical and Surgical Journal* of June 1, 1911, tells us that the effect of "606" upon the Wassermann reaction is very unfavorable compared to its effect upon the clinical symptoms. It is a common experience to see strong positive reactions continue for considerable periods of time in cases in which the clinical symptoms had disappeared with surprising rapidity.

The Wassermann reaction is not only of value in determining the permanence of the action of any antisyphilitic remedy, but is also of great importance in deciding whether the disease can be aborted by early treatment. Finger reports favorable results of early treatment in five cases of primary syphilis. The cases were negative before treatment. The reaction in each case was negative before treatment and remained so for periods of twelve weeks to six months, during which time no secondary manifestations had appeared. Similar results are reported by other observers.

The writer's personal experience is derived from about ninety injections of salvarsan given in conjunction with his colleague, Dr. William B. Trimble. Most of the work has been done in the service of his father, Dr. George Henry Fox, at the New York Skin and Cancer Hospital. With several exceptions he has only included in his table the cases in which the blood examinations were made during a period of five weeks or more. In over half of the cases the blood was tested at the end of two to six months. In all of the 34 cases in his table the Wassermann reaction was positive before the injection. In thirteen of the cases it became negative after treatment, at intervals varying from three to eleven weeks. Of these cases, eight had been treated with a single intramuscular injection, four with a single intravenous injection, and one by a combination of the two methods. While this would seem to show an advantage on the side of the intramuscular method of injection, the number of cases is too small from which to draw

any general conclusions. In a later communication the writer hopes to have more complete material and to give a detailed comparison of the clinical and serological results that have been obtained in their cases. Fox reaches the following conclusions:

1. It is difficult at the present time to draw general conclusions owing to the great discrepancies in the results of various observers.

2. These discrepancies are partly due to the different methods of injection and to the different stages of the disease in which the injections were given.

3. The results of a single injection given by either the intravenous or intramuscular methods are, as a rule, rather unsatisfactory from the serological standpoint.

4. Repeated injections seem to have given better results and offer a more hopeful outlook for the future.

5. The action of salvarsan upon the Wassermann reaction is in general analogous to that of mercury.

6. The effect upon the Wassermann reaction is much less favorable than upon the clinical manifestations of syphilis.

THE STATUS OF SALVARSAN IN PELLAGRA.

COLE and WINTHROP in the *Journal of the American Medical Association* of June 17, 1911, conclude that the administration of salvarsan in this disease of unknown etiology must be considered as empirical when we recall that this drug is considered specific for the spirochæta pallida.

The well-known dangers of administering salvarsan to patients suffering from cardiac and renal lesions should contraindicate its use in many cases of pellagra because of their well-known tendency to myocardial and renal degenerations. If given at all it should be given in broken and repeated doses and preferably by the intramuscular method.

The clinical evidence brought forth in this report shows only 33.3 per cent of improvement lasting seven or more days. Considering that this includes the treatment of all the types of the disease and that no patients are reported cured, they feel that thus far salvarsan offers no better results than other methods of treatment.

MEDICAL TREATMENT OF GASTRIC ULCER.

In the *Clinical Journal* of May 24, 1911, WYNTER deals with the special treatment of these cases. Philosophically, when any organ is diseased, the first thing required is physiological rest, and there appears at first sight to be great difficulty in giving such rest to the stomach because of the need of taking nutriment in order to maintain life. But this requirement has been apparently exaggerated, for the staple treatment now at the Middlesex Hospital in all these cases in which there is pain, vomiting, and hemorrhage—especially hemorrhage—is absolutely to starve the patient. It is found that, as a rule, such patients are not hungry, although the writer is aware that some text-books say that the patient's hunger is a peculiarity of ulcer as compared with cancer. But in his experience they are not hungry, and they do not become so for some days, so that the deprivation of food is no great trouble for them. But there is a difficulty in withholding fluid, and it is important to withhold fluid because of the disturbances which are brought about by the distention of the stomach when fluid is taken. The stomach expands and pulls upon the ulcer, thereby retarding the process of recovery. Further, if anything is put in the stomach the effect is to stimulate the secretion of gastric juice, and it is this acidity which the food provokes—not the food itself—that causes the irritation and the trouble. Another disturbing process is peristalsis. If we can exclude distention, acidity, and peristalsis, leaving the ulcer completely at rest, it is capable of healing very rapidly indeed.

The method of keeping the patient going without food is mainly carried out by giving water injections per rectum. The writer states he originally kept his patients on a

minimum amount of milk nutriment supplemented by a due quantity of water per rectum, but his colleague, Dr. Pasteur, has gone further, and given rectal injections of water only. The method is to proceed tentatively, giving first five, then eight, and then ten ounces of water in this manner so as to accustom the patient to retain it. She is then given an injection of ten ounces of water every four hours for as long as may be necessary. In the usual way this is not more than from three to five days, but in severe cases the treatment has been maintained for as long as three weeks. During that time the patient has not lost in bulk—he does not know about weight—and has suffered nothing in the way of discomfort. He remembers one very remarkable case of duodenal ulcer in a man, with persistently recurring hemorrhage, in which this treatment was prolonged for three weeks. When this patient first came in the hospital he was entirely blanched, and subsequent hemorrhages could hardly have made him paler. But when they ceased, the man actually gained color. The problem was as to where he got his color, involving as it did the development of hemoglobin in the blood. The truth of it was that he probably diffused hemoglobin from his muscles. Thus the patient may actually show an improvement in his condition rather than go back when placed on this purely water diet. It is the custom of the nurses to empty and wash out the bowel with a pint or two of water every morning, so that the cleansing of the colon is insured.

The adoption of this method gives an opening for drug treatment without interfering with the stomach. Some few years ago the writer was asked to see a patient who was almost *in extremis* on account of hemorrhage by the bowel. She had five copious blood motions in the course of the morning that he was present, and she was indeed in an extremely anemic and feeble condition. He employed a calcium treatment, giving her fifteen grains of calcium lactate dissolved in ten ounces of water every four hours. No doubt the patient was near the end of her hemorrhage, but from that time there was no repetition whatever. It is useful to know that by the addition of calcium lactate to the enemata the trouble from hemorrhage can so readily be met. Further, the time is long to patients thus situated, and often they do not sleep. They are alert, and mentally they suffer a great deal, with very severe physical pain sometimes added. Chloretone dissolved in the enemata will keep the patient in a kind of trance, or at least will act as a sedative, and this should be frequently repeated, perhaps every four hours. Ten ounces of water will carry ten grains of chloretone, and even more with the aid of glycerin.

As regards vomiting, or at least retching, which may be continuous, although there is nothing in the stomach, chloretone is most useful, and another remedy which was advocated three or four years ago was the inhalation of oxygen, but little use appears to have been made of it, and the writer does not think that any one has offered to explain how it acts. But the continued inhalation of oxygen will check almost any vomiting, and for cases of gastric ulcer in which one is unwilling to give drugs the oxygen inhalations are particularly useful. The writer asserts he has had the greatest success with this method in the persistent vomiting after operation for perforating ulcer. By giving these inhalations for a few minutes at a time the trouble was entirely quieted.

OLIVE OIL IN THE TREATMENT OF GASTRIC ULCER.

Lotz, in the *Wisconsin Medical Journal* for May, 1911, states his attention was first called to this subject by the admirable paper of Cowie and Munson entitled "An experimental study of the action of oil on gastric acidity and motility," which appeared early in 1908. Their experiments seem to have been carried out with such thoroughness and attention to detail, and are so convincing, that a brief résumé of a number of their results can perhaps do no harm.

In a case of gastric neurosis, after nine consecutive control meals, it required an average of 49 Cc. of decinormal soda solution to neutralize the free HCl, and an average of 66 Cc. to neutralize the total acids. They then gave the patient 1 ounce of olive oil one-half hour before each meal, and as a result it required an average of but 40 Cc. decinormal soda solution for the free HCl and 55 for the total acidity.

In a patient with a peptic ulcer the free HCl after control meals was neutralized by 62 Cc., the total acids by 72 Cc., but when oil preceded the meals it required but 25 Cc. to neutralize the free HCl, and 42 Cc. for the total acids.

In a case of hyperchlorhydria the free HCl averaged 92 in terms of Cc. decinormal soda solution. When 1 ounce of olive oil was administered immediately before the meals, the average dropped to 84; with 2 ounces of oil immediately preceding the meals, a farther drop to 70 followed, and when the 2 ounces of oil was given one-half hour before the meal, but 56 Cc. decinormal soda solution was required to produce complete neutralization of the free HCl; and finally, when the oil was discontinued the free HCl content again increased to 97.

In an epileptic with no gastric symptoms, the control meals showed a total acidity of 53. Then for 21 meals, which were preceded by oil, the average was but 28, to be followed by two controls, after which the acidity increased to 67, and when the oil was resumed the total acidity again decreased to 32.

And finally, in a brief résumé of 310 meals, in 170 controls the average number of Cc. required to neutralize the free HCl was 36.4, for the total acidity 51.3, while in 140 oil meals the figures were 22.4 for the former and 35.5 for the latter.

At about the time the above paper was published the writer was struggling with two intractable recurrent cases of gastric ulcer, which seemed to have as a more or less exciting factor a marked hyperacidity. Both cases apparently recovered from the acute condition under the use of rest, dietetic measures, bismuth and alkalies, but so soon as these were discontinued the old symptoms of hyperacidity would return, while the general nutrition of the patient was not much improved. He then resorted to the use of olive oil before meals. The results in both cases were exceptionally gratifying, and the oil treatment was used in all cases of gastric ulcer and hyperacidity, only to find out the truth of the old story that after all the patient must be treated, and not so much the condition.

In the six cases of gastric ulcer treated by means of olive oil, which are used as illustrations in this paper, no mention is made of the acidity of the gastric contents. There are several reasons for this—in the first place, several years ago numerous and persistent attempts were made to obtain the gastric contents after a test meal in some doubtful cases, but the difficulties and inconveniences were so numerous, and the results were so unsatisfactory, that the author soon lost faith in the diagnostic assistance obtained from a few gastric analyses. Furthermore, he believes it has been sufficiently demonstrated within recent years that the secretion of the gastric juice is modified by so many conditions, both mental and physical, that unless the patient is in a hospital, and under absolute control, very little dependence can be placed on a few isolated gastric analyses, made at different times and under various conditions. Finally, the cases used as examples are such that there is no doubt as far as the diagnosis is concerned—as all the cardinal symptoms of gastric ulcer, characteristic pain, tenderness, vomiting, and hemorrhage, were present.

THE X-RAY AS AN ADJUVANT IN THE TREATMENT OF CANCER.

Writing in the *Yale Medical Journal* for April, 1911, SKINNER states that in his opinion the following summary states the case comprehensively and succinctly:

First, the *x*-ray has demonstrated that it exhibits a powerfully curative influence over many cases of malignant disease.

Second, there is reason to believe that many postoperative recurrences are more resistant to the *x*-ray than the original growth; also, it is easier for the *x*-ray to influence microscopic foci of malignancy than those of larger size. For these two reasons, roentgenization should be commenced as soon after ablation as is consistent with the safety of the tissues involved in the operation wound, before recurrence can have been inaugurated.

Third, it is impossible to tell beforehand which cases will respond happily and which will not, or which cases will need roentgenization and which will not, hence the only way to be sure of treating those cases that will respond, and all that will need it, is to treat all cases.

Fourth, is it not, then, unfair to the cancer patient to submit him to the terrible risk involved in omitting the routine, postoperative application of so powerful a means for good as the *x*-ray?

Fifth, the advantages sometimes claimed for preoperative roentgenization have not yet been proven to obtain, and in any event the disadvantages which this procedure may precipitate are sufficient to constitute a strong argument against its employment, except in specially selected, rare cases.

RATIONAL EMPIRICISM AND SCIENTIFIC MEDICINE.

Sir Dyce Duckworth in the *British Medical Journal* of May 27, 1911, in writing on this subject calls attention to the so-called novelties in treatment, and adds that many of the novelties alluded to are alleged to be the results of scientific research and skill, largely conducted in foreign laboratories, and each one is introduced with an array of confident assertion as to its proved value. In about three years, or less time, we find that most of them disappear from notice, having been disregarded or found to be unworthy of confidence; yet some of them are in repute for a time, although urged on our attention with the flimsiest of recommendations. There would thus appear to be a fascination for novelty-hunting on the part of some members of our profession in respect of remedies. Where this exists, the author asserts, it has been his experience that in such instances as he has met with there has been a lack of accurate knowledge of the materia medica, and no less of the clinical art of prescribing appropriate and well-certified remedies. Novelty-hunting is therefore chargeable with promoting an unwise skepticism as to the value of drugs and a veritable decay of faith in rational therapeutics. To employ newly-introduced remedies with too great frequency is to be engaged in frivolous experimentation, and such a practice is as little creditable to the intelligence of the prescriber as it is beneficial to his patients.

This may appear a rather severe indictment to prefer, but the author is strongly of the opinion that it is justified by proceedings which are too prevalent at the present. Such practice is no part of scientific medicine, nor does it indicate true progress, and it cannot be reckoned as rational empiricism.

It is needless to add that these remarks have no bearing on the employment of such modern and approved remedies as have been certified by careful and prolonged research. It must be noted, however, that progress of this kind is made but slowly, and that novelties hurried out of the laboratory cannot promptly be pronounced as safe and effective for use until they have been brought to the touchstone of clinical experiment and repeated observation. A due recognition of this fact would render negligible many of the hasty and unwarrantable opinions on new remedies which are laid before us so frequently.

Such considerations bring us to realize the great fact that a large part of our best practice of medicine is still, and probably will be for a long period, an *art*, although founded on many branches of *science*. If we are disposed to wait until all our therapeutic efforts are founded on principles of exact science, it is to be feared that our patients will not wait, and that they will have recourse to the medical *artist* in preference

to the medical *scientist*. Human nature is very human, especially when it is diseased, and it knows what it wants.

The author, therefore, believes we may affirm boldly, and without any misgiving, that much of the best medical practice is still empirical, and that a great physician is a great artist. It has always been so, and is likely to remain so for many a day. One result of this has been to deter some men of great mental ability from entering the profession, finding themselves dissatisfied with any methods of treatment which may not be placed on a mathematical or scientific basis. Such skeptics have not the faculty for acquiring an art, and could never become useful practitioners. The field for their capacities lies elsewhere. They have certainly no *mens medica*, and could make no progress in medicine.

It is necessary in discussing this question to have a right conception of the term "empirical." It is sometimes applied in a wrong sense as signifying a pretender to knowledge, or one who stands outside the ranks of an educated profession. Yet in its essence it is the product of "experience founded on observation alone," and in these terms we have the definition of no less an authority than Sir William Hamilton. As applied to a legitimate practice of medicine in these days, it cannot be said that "empiricism is experiment or experience without science," for the phenomena of disease are now carefully studied by many men well trained in scientific methods, and the results of treatment are no less rigidly noted than a scientist would note them.

We may fairly conclude that rational empiricism has never held a higher place in the history of medicine than it does to-day, and further, Duckworth asks if it would be prudent or justifiable to throw aside forthwith all that it has secured for fruitful knowledge, and our guidance, in deference to the modern claims of scientific medicine.

We take note of dogmatic opinions issuing from the laboratories in regard to the action of drugs and articles of diet, which in some cases completely contradict the experience of clinical experts. For example, we find a condemnation of alcohol both as a food and remedy at the hands of physiologists who have no clinical practice or experience of the treatment of morbid conditions in their fellow creatures. To such researches the physician replies that he is sadly aware of the ill effects of alcohol when improperly used by man, and perfectly conceives that large doses of it are toxic and deadly for small animals, but that in clinical practice he finds it extremely useful in appropriate quantities for his patients in certain conditions.

In like manner we are told that strychnine has no action whatever on the heart, and that aconite is of no avail in reducing the frequency of the pulse, but in clinical practice we are familiar with good resulting somehow from the use of these agents, and we cannot afford to discard them until the precise *modus medendi* is revealed to us. We have to save life and to relieve suffering as we best can in the meantime, and if such practice is empirical it is certainly rational and beneficial; and we may at least be thankful for the advantages which are distinctly obtained by it. We may not forget that empiricism has often anticipated science in medicine. Clinical experience has certified the value of some drugs whose action the scientist has long subsequently learned to explain, and there are still many remedies of which the efficacy is well assured whose exact action remains to be explained on a scientific basis. Empiricism thus aids scientific medicine by affording suggestions and indications for research.

QUININE AND BLACKWATER FEVER.

The *Lancet* of June 10, 1911, deals with this subject as follows:

In an interesting clinical account of a case of blackwater fever in the Eastern Transvaal, Dr. J. Stanley Avery states that the patient, a resident in the Barberton district, had contracted malarial fever in November, 1909, and had suffered from relapses during the year following In November, 1910, he fell ill with general malaise, headache, anemia, nausea, and bilious

vomiting; at the beginning of December blood appeared in the urine, and he went into hospital at Newington. The presence of hemoglobin was demonstrated by the spectroscope, but after three days the oxyhemoglobin bands were replaced by the broad band characteristic of urobilin, which persisted for a fortnight. Albumin was present for a few days, then fell to a mere trace, but reappeared together with the oxyhemoglobin for a few days. There was enlargement of the liver and spleen lasting for a fortnight. Jaundice was a prominent symptom in the first week of the illness, and obstinate constipation continued throughout five weeks. No malarial parasites were detected in blood films, two of which were examined at intervals of a fortnight. Quinine was purposely withheld during the first three weeks on account of the absence of malarial parasites in the blood films and of the presence of blood in the urine. It was then administered as bihydrochloride, in gradually increasing doses, until as much as 30 grains were given, without favorably influencing the course of the fever, which, however, came to an end.

Dr. Avery refers to the confusion that exists with regard to blackwater fever. There are three principal theories as to its etiology: (1) that it is due to malaria; (2) that it is due to quinine; and (3) that it is a distinct specific disease. He does not believe that it can be due to malaria, for the doses of quinine that are sufficient to influence favorably such cases were of no material benefit in the case reported. Neither does quinine appear to have been a possible cause in the present instance, for hemoglobinuria did not occur until ten days after all quinine had been stopped. He thinks, however, that quinine may cause exacerbation of symptoms if persisted in for some length of time, blood or some hemoglobin derivative being excreted in the urine. Dr. Avery inclines to the third view, that blackwater fever is a separate entity. The argument that no parasites other than those of malaria have even been detected in blood specimens in this disease up to the present does not disprove it. Cases of this disease occur in out-of-the-way places where facilities for laboratory research are absent. All the more value, therefore, attaches to detailed clinical records such as have been carefully kept in the present case.

TREATMENT OF TYPHOID FEVER BY VACCINES.

In discussing this subject in the *Canadian Medical Association Journal* for June, 1911, MEAKINS reaches the following conclusions:

1. The prophylactic use of vaccines is of great value in diminishing the incidence and mortality of typhoid fever.

2. The treatment of typhoid fever by vaccines shortens the course and diminishes the severity of the disease.

3. This treatment has also a very beneficial influence on the number of complications, relapses, and deaths in typhoid fever.

4. The only successful treatment of typhoid carriers has, up to the present time, been that of autogenous vaccination.

THE POISONOUS FUMES PRODUCED BY EXPLOSIVES.

In an interesting and instructive paper contributed to the columns of the *Lancet* Sir Thomas Oliver comes to a fresh conclusion in regard to the gas which is accountable for the poisonous effects produced on miners who have inhaled the fumes from explosives. The view hitherto has been that the chief toxic substances in these fumes were nitrous bodies derived from the explosion of nitro explosives, of which nitroglycerin, gelignite, bellite, roburite, and tonite are examples. "Taking a wide view," writes Sir Thomas Oliver, "of the effect of inhalations of the fumes given off by explosives upon miners generally, and with chemical analyses of the fumes before me, and the results of experiments upon animals to guide me, I am more and more disposed to regard the cause of the intoxication as carbon monoxide and not nitrous fumes." Further, the hemorrhages in the lungs and the chromatolytic

changes found in the brain cells of animals exposed to gelignite smoke bear such a close resemblance to the changes which occur in nickel-carbonyl poisoning, in which he considers carbon monoxide to play the principal if not the only part, that he is forced to think that the symptoms which follow inhalations of the fumes of explosives are due to carbon monoxide and not to nitrous fumes. This conclusion is of special importance in regard to the Workmen's Compensation Act, in which a clause refers to "nitrous fumes and sequelæ," and Sir Thomas Oliver suggests whether it is not desirable to delete these words, since, as things at present stand, they may be unfairly taken advantage of by miners, and thereby become a prolific source of malingering.

It may be pointed out that Sir Thomas Oliver's view that carbon monoxide plays the principal if not the only part in nickel-carbonyl poisoning is not supported by the research on the subject undertaken in 1907 by Mr. H. W. Armit in the Lister Institute of Preventive Medicine, and referred to in the *Lancet* of September 28, 1907 (p. 307). Mr. Armit concluded that the poisonous properties of nickel-carbonyl do not depend upon the carbon monoxide of the compound, but on the nickel, and that most probably this metal is deposited as a slightly soluble compound in a very fine state of subdivision over the immense area of the respiratory surface; the nickel-carbonyl is absorbed as such, and the nickel being set free later acts toxically in the tissues. It is not clear, however, as to what is the fate of the carbon monoxide molecule when the nickel is separated in the way suggested.—*Lancet*, June 10, 1911.

THE RELATION OF TETANUS TO INJECTIONS OF QUININE.

The occurrence of tetanus after an operation wound is always a distressing incident to the practitioner, and when it supervenes after such a trivial injury as the insertion of a needle for hypodermic injection it amounts to a calamity. It is unfortunately a fact that in many cases tetanus has supervened on the administration of quinine in this manner, even when all precautions as to sterilization have been carefully carried out. The late Professor Maclean was much impressed by this danger. "There is something revolting," he said, "in a death brought about directly or indirectly by a remedy intended to cure." Naturally it is chiefly in tropical climates that this accident is likely to occur, but there is not any very extensive record of cases, possibly because the medical men concerned have not been anxious to say much about them. The dangers of subcutaneous injection of this drug, and the reasons thereof, have been recently considered in a memoir on "Quinine and its Salts," by Captain A. C. MacGilchrist, I.M.S. In a further memoir by the Director of the Indian Central Research Institute at Kassuli we have a full discussion of the "Relation of Tetanus to Quinine Injection." On this memoir a correspondent in India sent the *Lancet* a brief note, but it merits fuller consideration.

In an account of his researches, Sir David Sample, after a consideration of the nature of tetanus infection, describes the effects of large doses of quinine on rabbits and guinea-pigs, the principal objects of the experiments being to determine (1) the dose which would produce well-marked effects without proving fatal; (2) the local effects when given hypodermically; (3) whether the local and general effects, when the drug is so given, have any influence in favoring tetanus infection; (4) whether animals can withstand larger doses by the stomach than hypodermically; and (5) to gain some information as to the effects of quinine given intravenously. The salt of quinine used was the bihydrochloride. When given hypodermically, 1 grain per 150 grammes body weight for a guinea-pig and 6 grains per 1000 grammes for a rabbit are lethal doses. By the stomach, 1¼ and 15 grains have the same relative effects on these two animals respectively, but in some cases less would prove fatal. These fatal results are not due to the acidity of the solutions used.

An important point established was that, when injected either hypodermically or into the muscles, quinine has a well-marked destructive action on the tissues at the site of the injection; foci of dead tissue are produced, serving as suitable anaerobic media for the growth of tetanus spores should these be introduced; and, besides this, conditions are brought about favorable for infection by "washed tetanus spores," supposing these are injected into other situations. What are called "washed tetanus spores" are spores which have been freed from every trace of toxin by filtration and washing the precipitate with normal saline solution. They do not cause tetanus when injected into guinea-pigs or other susceptible animals, because the phagocytes at the seat of injection are capable of picking up and digesting such pure spores; provided that there is nothing introduced to destroy tissue, produce a "negative chemotaxis," or divert the phagocytes from performing their bactericidal functions. Quinine injection, however, has such an effect. When quinine is given hypodermically to tetanus-infected animals, tetanus germs are transferred from the original site of infection to the site of quinine injection. This is a very remarkable phenomenon; it was noticed in five out of six experiments, confirming Vincent's observations in 1904. It is supposed that the phagocytes are weakened, that some reënter the circulation carrying tetanus spores, and before they are able to deal with them get stranded at the site of quinine injection; here the spores find dead tissue under anaerobic conditions suitable for their germination.

"Washed tetanus spores," injected hypodermically, do not cause tetanus in guinea-pigs and monkeys; but a large percentage of animals do contract tetanus if hypodermic quinine injections are given at or about the same time. Washed tetanus spores, when injected hypodermically, may remain latent for months. It was found that cold (exposure to a temperature of 38° F. in a cold chamber) had an influence in producing tetanus in guinea-pigs when washed spores were inoculated, this influence being increased by the hypodermic injection of quinine. Tetanus infection was present in the intestine of four out of ten healthy human subjects examined, and in three of these cases the bacilli were virulent to guinea-pigs; pseudotetanus bacilli were present in all ten cases. Tetanus spores were found to survive and retain their virulence on a rusty pen-nib for a prolonged period; the nib was in a test-tube capped with india-rubber, kept in a cupboard at room temperature. Lastly, tetanus antitoxin has been found to be an efficient prophylactic against tetanus, when it is necessary to give quinine hypodermically.

This most valuable research throws light on much that has hitherto been obscure; it confirms the opinion that there is risk in the employment of hypodermic quinine injections, but also shows how the dangers may be avoided.—*Lancet*, June 10, 1911.

THE TREATMENT OF ECZEMA.

HARTZELL in the *Pennsylvania Medical Journal* for May, 1911, tells us that a most important question which must be decided before beginning the treatment of any case of eczema is, Shall this case be treated by internal remedies as well as by local ones, or by local applications alone? It is not always easy to give a satisfactory answer. If the disease occupies a limited area, and especially if it belongs to that very large group known as occupation or trade eczemas which are due to repeated and prolonged contact with some irritant, and are, therefore, of strictly local origin, then we may very properly dispense with internal treatment, relying upon local remedies alone. It should always be remembered that there are no remedies which, given internally, directly exert a curative influence upon eczema, and therefore the internal treatment should be conducted upon general principles. If the patient has, in addition to his cutaneous affection, any functional or organic disorder, the general treatment must be directed to the cure, or if this is not possible, the improvement of this dis-

order, rather than to the skin, in the hope that by improving the patient's general condition the cutaneous disease will likewise be favorably influenced.

A few words concerning the internal use of arsenic in eczema will not be out of place, since this drug, although much less used at the present time than formerly, yet holds a more or less important place in the internal treatment of this affection, not among dermatologists, it is true, but among those in general practice. We may say at once that its use in acute eczema is positively contraindicated; not only is it useless when the disease is at all acute, but it may be actually harmful, increasing the inflammation and adding to the patient's distress. The only cases in which it may be employed are the chronic ones in which thickening of the skin and scaling are well-marked symptoms; but even in these its usefulness is extremely doubtful. Indeed, the author honestly confesses that his own experience with this drug has led him to regard it as of no value in the treatment of eczema of any variety; it has always disappointed him.

In cases in which the eruption is at all extensive and acute, alkalies freely given will frequently be found more or less beneficial. Citrate or acetate of potash, in doses sufficiently large to make the urine alkaline and to keep it so, will often favorably influence the eruption, materially diminishing the burning and itching. Calcium chloride or lactate will often be found of service in certain cases in relieving itching, and especially in diminishing the tendency to exudation and discharge. Neither the alkalies nor the calcium salts, however, should be continued over any considerable period since the former may do harm, especially in elderly and debilitated subjects, and the latter soon lose their effect.

The author has long been convinced of the usefulness of drugs like acetphenetidin and antipyrin, especially when combined with some alkali like sodium bicarbonate, in those cases in which, owing to the severity and long continuance of the itching, the patient's nerves have "gone to pieces," as so often happens. Used in appropriate cases with judgment they often act most happily in relieving for a time at least the intolerable itching.

In discussing the external treatment of eczema the author necessarily has to be very brief. He does not attempt to enumerate the many remedies which may be used locally with more or less benefit in this malady, since these are to be found in every text-book of dermatology. He contents himself with calling attention to certain points not usually discussed, in any detail, in treatises on cutaneous diseases, the neglect of which he believes to be responsible in large measure for the frequent failure of the general practitioner successfully to manage not only eczema, but diseases of the skin generally.

The first matter to which he calls attention is the very frequent failure to recognize the importance of definite dosage in external medication. It is just as important that the correct quantity of the drug selected be employed in the ointment or lotion prescribed as that a certain definite dose be administered internally. He might give many examples of this in illustration, but one or two must suffice. An ointment containing from one to three per cent of resorcin will often prove a useful sedative in eczema, allaying itching and burning; if the amount of resorcin is increased to ten or fifteen per cent it will almost certainly act as a powerful irritant, greatly increasing the patient's discomfort, and if applied to the skin in strength of forty to fifty per cent it will act as a mild caustic. Menthol is an exceedingly valuable remedy for the relief of itching, used in an ointment or lotion containing from one to four grains to the ounce, but if used in the strength of ten to twenty grains to the ounce the cooling sensation which the patient often finds so agreeable is quickly replaced by more or less severe burning.

The manner of the employment of the local remedy selected is a matter of the first importance, but one to which sufficient attention is rarely paid. It is not sufficient to prescribe the proper ointment or lotion,

but the patient should be told with sufficient detail how to use it if the best results are to be obtained. If the patient is given an internal remedy he usually knows enough to swallow it without further instruction, but if he is given an ointment or lotion without detailed instruction as to its use he may do many things with it, and he often does. The proper way in which an ointment, for example, should be employed will depend very largely upon what one wishes to accomplish with it. If it is to be used as a simple protective, as in acute eczema, it should be gently spread over the skin, or spread on lint, and lightly bound upon the affected part; but if it is desired to affect the deeper parts, as in chronic eczema with much thickening and scaling, it must be well rubbed in. Very frequently the lotion which was intended to be an evaporating and cooling application is transformed into a hot, steamy fomentation because the attendant, instead of softly mopping it on, or, better, spraying it on with an atomizer, has saturated several thicknesses of gauze with it and covered it over with paraffin paper or oiled silk and bound the whole on with many turns of a roller bandage.

As a rule patients with very acute eczema find lotions much more agreeable than salves; and it sometimes happens (very exceptionally it is true, especially in children) that ointments are not well borne at all, so that we must limit our local applications to lotions. In chronic eczemas lotions are usually far less effective if there is much thickening.

In conclusion, the author emphasizes the fact that success in the management of this very troublesome affection is only to be secured by unremitting attention to detail, particularly in the local treatment.

OBSTETRICS IN GENERAL PRACTICE.

WORCESTER writing on this topic in the *Boston Medical and Surgical Journal* of June 15, 1911, gives many excellent suggestions for the general practitioner.

In the immediate preparation for the labor of patients, the writer asserts he has so often been forced to strictest economy that he has become accustomed to doing without, and, indeed, to considering superfluous, much that he finds some families, acting under other advice, have provided. He has taken comfort in recognizing that after all the bringing forth new life into the world, instead of being a sickness or a cataclysm, is nature's most natural process, and that the very most he can do at such times is to help and not hinder. He has, therefore, tried to simplify rather than complicate the family enlargement problem. To this end he has given much time and strength to the training of nurses for this special service. And he has found that nurses properly taught are of immense help at such times to the physicians, the family, and the patient. But he protests against some of the fads he finds nurses being taught nowadays. For instance, it is abominable to shave the patient before or during her labor, as if for a serious surgical operation. He wants to emphasize the advantage the family physician has over the specialist in his obstetric practice, in keeping child-bearing in true perspective, in maintaining its ordinary matter-of-course character. Of utmost importance is it to ward off from the expectant mother all anxiety and foreboding. The writer does not wish to be misunderstood, as his own list of disasters, he asserts, is too long for him to ignore the danger incident to child-bearing, or to counsel the accoucheur even to forget their imminence. But these fears should never, directly or indirectly, reach the patient. And the excessive precautions and the extensive preparations now fashionable most certainly do tend to frighten pregnant women and to deter them from subsequent child-bearing.

The management of the first stage of labor he has always entrusted to the nurse. In no other way would even a moderate obstetric practice be possible for the general practitioner. And, fortunately for him, such service can be performed by the nurse better than by any man. Not only the cleansing enema can be better given by the nurse, but also the needed cheer and comfort and reassurance. True, the physician who relies upon either his own guess-

work or upon his nurse's judgment as to the probable hour of the delivery will sometimes miss being on hand. But where the child comes into the world expeditiously, a properly trained nurse can manage the delivery well enough and also give first aid in emergencies. At any rate, in his practice the author found no harm resulting from leaving the care of the first stage to the nurse. Where the babies have been born before his arrival there may have been a slightly larger percentage of perineums to repair, but probably not larger than in cases of similar precipitancy where he was in immediate charge.

He states that when he remembers how much he has tried to do for his patients in the second stage of their labors, he feels compelled to apologize for his use of the term "normal" in reporting these 350 cases where nothing unusual happened. The fact is he has been constantly trying to learn how to give most help. In the matter of posture, for instance, he has urged his patients to take whatever posture they wanted. So some have been delivered while lying on their sides, or backs, and some while on their hands and knees, and some while sitting on the edge of the bed, as is the custom among the Appalachians. When no progress is being made, he has found it a good plan to urge radical change of posture.

With few exceptions he has given an anesthetic to dull the suffering from second-stage pains. For this purpose ether is contraindicated, except in Boston. Chloroform is much better, but not so serviceable as a mixture of it with ethyl bromide.

In trying to help on the progress of the delivery he has, of course, often dilated the cervix, flexed the baby's head, and rotated it into more favorable position. He does not know how much physical help has thus been given, but he asserts he is sure that many women have been very grateful for these efforts, and also for the hot fomentations he always applies to the stretched perineum, thereby increasing its elasticity. But he has never found a patient appreciative of his holding back her baby's head in order to secure safer dilatation of the ostium vaginæ. It is just then that an anesthetic is of greatest service, in thus allowing the delivery of the head between pains. He is satisfied that such is the easiest way for the mother as well as the safest for her perineum.

A FEW PLAIN TRUTHS ABOUT ARSENOBENZOL.

GOTTHEIL in the *New York State Journal of Medicine* for June, 1911, writing under this title says that he restricts himself to a bald statement of the results of his study of arsenobenzol. He embodies them in a series of propositions which he thinks can be sustained.

1. Arsenobenzol does not "cure" syphilis any more than mercury does, and perhaps less than mercury does. This is true of one or two doses of the new drug, the effect of which is comparable to that of a few mercurial injections. It does not "sterilize" the body.

2. Arsenobenzol is a powerful symptomatic remedy for the leutic phenomena, in some cases acting quicker and more vigorously than mercury, in others being equal to the older drug in therapeutic action, and in still others being ineffective.

3. Symptoms of persisting infection, wrongly called "relapses," appear rather more quickly after one or two arsenobenzol injections than they do in the course of an effective mercurial medication. This is to be expected when it is understood that complete sterilization with one or two injections is impossible. Long-continued action is required, as the mercurial medication attempts to effect.

4. Cases recently infected, in which the symptoms may be expected to appear in rapid succession, are the ones by which the efficacy of the arsenobenzol must be estimated. Isolated tertiary phenomena, appearing after long intervals of apparent health, may, when healed, be followed by symptomless intervals of indefinite length under any treatment, or under none at all. No conclusions as to the lasting effects of the new remedy can be drawn from them.

5. Since complete sterilization of the body cannot be effected by arsenobenzol, the intravenous administration of the drug.

by means of which the system is subjected to the very fugacious action of a large amount of the arsenic, does not seem to be indicated save in exceptional cases. Intramuscular injection, as more lasting, would seem to be preferable; and it is very possible that the future may teach us that the best results are to be attained by the administration of much smaller doses in prolonged courses, exactly as is done with mercury.

6. There are disadvantages and even dangers incidental to the arsenobenzol medication, concerning which we are still insufficiently informed; and we do not yet, and shall not for a long time, know its ultimate effects. It is not therefore to be recommended to the profession at large for the general treatment of luetic disease.

7. On the other hand we do possess a remedy, which we know all about, which is of undoubted efficacy, and which does cure syphilis. Mercury is still the antisyphilitic for general use, and we cannot do without it. The best proof of this is the fact that the latest advice from quarters where the arsenobenzol has been longest and most extensively employed, and where the prejudice is all in its favor, is to use it first, and then to proceed to the regular and prolonged mercurial treatment as before.

8. Cases of syphilis recalcitrant to mercury, or with an idosyncrasy against the drug, do occur, but by no means with the frequency that recent reports would indicate. Inefficient medication or a possibly unconscious bias in favor of the newer treatment accounts for many of them.

9. Arsenobenzol, in the experience of the author, has been specially efficacious in some cases of early syphilis of severe type, especially those showing ulcerative dermal lesions, mucous patches, and condylomata; and in some late and obstinate tertiary affections, such as palmar and plantar squamous lesions, leucoplakia syphilitica, gummatous infiltrations of the internal organs, etc. In most cases its symptomatic effect is equal to that of mercury; and like this latter drug, it sometimes fails entirely.

10. It is generally conceded that arsenobenzol is as useless as mercury for the syphilitic sequelæ after organic changes have occurred. It has not given results in late brain or spinal cord disease due to the infection.

11. With our present information the writer considers arsenobenzol indicated in the following classes of cases of the disease:

(*a*) In early cases of specially severe type, in which the disease manifestations are multiform, or follow each other with great rapidity, or do not seem controllable by efficient mercurial treatment.

(*b*) In cases of persistent or recurring infective lesions like mucous patches, in which the danger to the patients' surroundings must be minimized by the quickest possible removal of the infective foci.

(*c*) In cases in which circumstances do not permit persistent and prolonged mercurial medication, as in travelers, prostitutes, etc.

(*d*) In cases of late syphilis of especially obstinate or recurrent type.

(*e*) In cases in which immediate and most energetic action is required to save an organ or to prevent irreparable tissue damage.

(*f*) In the rare cases in which mercury does not act, or in which it cannot be given.

12. Arsenobenzol does not seem to be indicated:

(*a*) In the ordinary run of cases of syphilis, on account of our ignorance of its permanent action on the disease, and of its dangers, and because we possess other harmless, perfectly efficient, and well-understood means of medication.

(*b*) In cases that have lesions of the internal organs, more especially of the kidneys or of the eyes.

(*c*) In cases suffering from the after-effects of syphilitic processes when permanent organic changes have occurred.

In conclusion the author states his belief that we have in arsenobenzol a permanent addition to our antiluetic armamentarium, and one that will enable us to cope more successfully than has heretofore been possible with certain phases of the infection; but that we have no more got a cure for

syphilis, save in the sense and with the limitations that mercury is a cure, than we had before its introduction, and that the mercurial medication is required in every case no matter whether arsenobenzol has been used or not.

THE TREATMENT OF GASRIC HYPERACIDITY WITH HYDROGEN PEROXIDE.

HALL has studied this subject and concludes in the *Boston Medical and Surgical Journal* that H_2O_2 diminishes the amount of hydrochloric acid in the stomach.

That those patients with hyperchlorhydria get great or total relief from their symptoms.

That there is a gain in weight.

That it does not appear to benefit cases with active ulcer.

That this method of treatment is a useful addition to the methods already in use, in the treatment of hyperchlorhydria.

FORSTER OPERATION FOR POSTERIOR ROOT RESECTION.

MAY (*Lancet*, June 3, 1911) observes that there are two chief indications for posterior root resection. The after-treatment was regarded as of major importance. The deformity must be corrected by appropriate mechanical means. Plastic operations are sometimes required to overcome the contractures, and exercises must be commenced at the earliest possible opportunity.

There are two chief indications for posterior root section in cases of spastic paralysis: The presence of such severe contracture as to make standing and walking impossible; and the occurrence of painful cramps in the affected limbs.

Up to the present the majority of reported cases have been those of various types of cerebral diplegia, though successful results have been obtained also in hemiplegia (arm), disseminated sclerosis, and spastic paraplegia from spinal caries. Impaired mental capacity is no contraindication; many good results have been obtained in imbecile children, who have after the operation been taught to stand and walk; indeed, in several cases considerable mental improvement has been noticed, perhaps as a result of the widened field of interest permitted by the newly acquired power of locomotion. A striking example of this improvement is noted by Küttner in one of his cases, a boy of ten, who previously could neither sit, stand, nor walk, nor barely speak at all.

It is, of course, obvious that good results are not to be obtained if the pyramidal tracts are completely destroyed. But in such a case—*e.g.*, complete transverse myelitis—the paralysis would be a flaccid one, so that the question of operation would not come up for consideration. In all spastic cases, however severe the apparent paralysis, the latter is no contraindication, as it is impossible to tell until the spasticity has been removed how much power of voluntary movement will be obtained.

As regards the question of operating for the relief of a hemiplegic arm, there seems to be at present less consensus of opinion. Several such operations have been performed, and in some of them, notably one reported by Küttner, the result has been very satisfactory. Förster, however, thinks the results on the whole less satisfactory than in the case of the legs. He explains this difference by the relatively greater motor (pyramidal) innervation required for the fine arm movements—more innervation in fact than survives in the majority of cases of hemiplegia.

Detailed descriptions of the technique have been published by Tietz and Küttner. Most surgeons recommend the performance of the operation in two stages, the first consisting of a suitable laminectomy, the second, after a few days' interval, of opening the dura and dividing the necessary roots. The advantages of the two-stage operation are diminished shock, and especially the absence of bleeding in the field of operation, so that when the dura is opened a clear, uninterrupted view of the roots is obtained —an essential requisite for their identification. Gottstein, Auschütz, and Hevezi, on the other hand, have published cases done

in one stage, and claim that the method is justified by the diminished chance of septic contamination. However, Hevezi had, in his one case, to postpone the complete suturing until the day following the operation, owing to the collapsed condition of his patient (a girl of eleven years).

The patient is anesthetized with ether and placed in the prone position, with a support under the pelvis to produce lumbar kyphosis. For operation on the lumbosacral roots, the skin incision should extend in the middle line from the twelfth thoracic spine to the junction of the upper and middle thirds of the sacrum. Then before proceeding with the laminectomy, a landmark must be inserted to assist in the identification of the roots. The landmark in question is the tip of the spinous process of the fifth lumbar vertebra. This marks the level at which the first sacral roots leave the dural canal. Tietz marked this by driving a nail into the vertebra, but Küttner adopted the simpler device of putting a stitch through the muscles at this level. The laminæ of all the lumbar vertebræ are then removed together with the posterior wall of the upper part of the sacral canal. It is essential that the exposure of the dura should be a free one, and it is usually well to remove the internal articular processes with the laminæ, so as to leave a free space of about 2 centimeters in width.

At the second stage the dura is carefully slit with fine scissors at the lower part of the wound and the cerebrospinal fluid allowed gradually to escape. The cut in the dura is then cautiously prolonged upward, fine silk guiding stitches being introduced at intervals of about 2 or 3 centimeters. The roots forming the cauda equina are thus exposed, and if the laminectomy has been freely enough done, these can be traced to their exit from the dura. The posterior roots are larger than the corresponding anterior ones and lie laterally to them. The first sacral is the one on the level of the orientation stitch; it is considerably larger than the second, a useful confirmatory point in its identification. The posterior root of the second sacral is then carefully lifted up and isolated on two strabismus hooks; it is well before resecting it to pinch it gently with a pair of forceps; this produces no result, whereas the same procedure applied to an anterior root evokes lively contraction in the corresponding muscles. A good length (as much as possible) is now resected, and the other roots, the fifth lumbar and second sacral, are treated in the same way. The dura is then closed by a fine silk continuous suture, and the muscles, aponeurosis, and skin closed in separate layers without drainage.

A modification of the technique has been suggested by Taylor, who employs a hemilaminectomy, leaving the spinous process intact. This method has been employed with success by him and Abbe for the arm, but is obviously unsuitable in cases in which division of roots on both sides is required.

The roots recommended for division by Förster for the arm are the fourth, fifth, seventh and eighth cervical and first or second thoracic, but they can be selected in accordance with the principles enunciated above. Taylor's method of partial division of each root is particularly applicable in this situation.

TREATMENT OF JOINT INFECTIONS BY ASPIRATION AND INJECTION OF TWO-PER-CENT FORMALIN IN GLYCERIN.

Poley (*Northwest Medicine*, March, 1911) notes that in Dr. John B. Murphy's service he had sixteen joint cases under his treatment. The formalin was regarded as stimulating and healing. His greatest percentage of cures is to be noted in acute and subacute joint inflammations. Tuberculous synovitis is said to give brilliant results. Extension is put on after treatment. The solution is prepared by adding to an ounce of glycerin 10 drops of formalin. This is thoroughly shaken. It should not be used unless made up twenty-four hours previously. Extension apparatus is applied before the injection is made. The fluid in the joint is first aspirated, and into the knee-joint about half an ounce of the solution is slowly injected. Equal distribution of the

solution to every part of the joint cavity should be secured by flexion, extension, and massage. A cotton collodion dressing is applied, the weight swung into place, and the patient given one-fourth grain of morphine immediately. A second morphine injection may be necessary in four or six hours, but after this the patient is very comfortable.

On the fifth day the acute swelling begins to recede and pain becomes less on passive motion. The interval between injections is usually ten to fourteen days. Two injections are often sufficient, but as many as five are warrantable before giving up a case. After the last injection a tuberculous case is allowed to walk on crutches four to six months, wearing a long, three-fifths, circular cast and receiving tuberculin injections of five to ten milligrammes once a week. Of the tuberculous knee cases, seven are reported as having been cured by from two to five injections. Non-traumatic synovitis of the knee was cured by two injections; one cryptogenetic infection of the knees and the right elbow, three injections cured. It was noted that one case of synovitis of the shoulder and one case of beginning arthritis deformans were unimproved.

THE SUPRAPUBIC TRANSVERSE FASCIAL INCISION IN GYNECOLOGY.

Wilson (*Lancet*, May 6, 1911) speaks enthusiastically of the advantages of Pfannenstiel's transverse incision, which he describes, and sums up the advantages over the longitudinal incision by stating that there is lessened risk of ventral hernia; it affords easier access and more ample room than a longitudinal one and the cosmetic effect is better. The method of making the incision is as follows: A transverse incision from 3½ to 4 inches in length, slightly curved with the concavity upward, is made about two fingerbreadths above the pubes and carried down through the subcutaneous fatty tissue and the deeper layer of the superficial fascia to the sheaths of the recti, which are then also divided transversely by knife or scissors to the full extent of the incision. The sheath of each rectus can then be easily raised by passing a finger between it and the muscle, the flap of fascia being readily drawn up except from the middle line where the pyramidales muscles are inserted into the fascia, and require a light touch of scalpel or scissors. The flap of fascia having been well pulled up in the middle line, the recti are pulled apart by retractors and the transversalis fascia and peritoneum are divided longitudinally in the usual manner. If more room is required at the lower part of the incision the lower ends of the sheath of the recti can be separated from the muscles in a similar manner, and the peritoneal incision then continued downward. It is usually advantageous to fix the end of the upper flap by suturing the fascia to the skin below the umbilicus; the suture acts as a retractor and facilitates subsequent maneuvers. If required, more room can be obtained by extending laterally the incision through the skin and fascia and pulling up the fascial flap to a higher level. In this extension the incision is prolonged to a point where the fascia separates into its constituent layers, but this makes no difference to the subsequent suturing.

At the close of the operation the peritoneum with the transversalis fascia is first brought together by continuous or interrupted catgut sutures. Two or three catgut sutures then bring the muscles together in the middle line, and are tied gently so that the muscular fibers may not be cut across; one of these sutures should be placed at the level of the transverse incision through the fascia, the only position at which hernia may possibly develop later. The fascia is then brought together by interrupted catgut sutures; or the skin and fascial layers may be brought together by deep silkworm-gut sutures.

THE LUMBOSACRAL ARTICULATION.

Goldthwait (*Boston Medical and Surgical Journal*, vol. clxiv, No. 11) offers a further contribution on this articulation, led thereto by the paraplegia developing in the course of application of a plaster-of-Paris

bandage for the maintenance in position of the replaced sacroiliac joint. It is pointed out that the lumbosacral displacement may cause pressure upon the cauda. He states that the lumbosacral articulation varies very greatly in its stability, depending upon peculiarities in the formation of the articular processes and of the transverse processes; that these peculiarities not only result in less than the normal strength of the joint, but may represent mechanical elements which not only produce strain and cause pain, but may lead to such great instability that actual displacement of the bones may result, with at the same time the separation of the posterior portion of the intervertebral disk. In such displacement, if the fifth lumbar slides forward upon the sacrum (spondylolisthesis), the condition is usually compensated for, and pressure upon the cauda equina or the nerve roots does not occur.

If the displacement be upon one side, the spine must be rotated and the articular process of the fifth is drawn into the spinal canal with such narrowing that a paraplegia may result, or the crowding backward of the intervertebral disk alone may be so great as to cause similar paraplegia, but of more gradual development.

Weakness of the joints or the partial displacements may cause irritation of the nerves inside or outside of the canal and produce the bilateral leg pains often called sciatica.

A NEW PRINCIPLE IN THE TREATMENT OF GRAVES'S DISEASE.

CRILE (*Lancet-Clinic*, April 1, 1911) quotes Hirst, who in a series of 73 surgical operations upon other parts of the body than the thyroid in cases of Graves's disease found that the surgical risk was just as high and the phenomena were precisely the same in these operations as in operations upon the thyroid gland itself in cases of Graves's disease. It is clear that in Graves's disease the patient is hypersusceptible to many influences, but especially to both trauma and fear. The rôle played by trauma alone in the causation of exacerbation in cases of Graves's disease was clearly defined by the following method of performing the operation upon the thyroid: The patient was so managed that she was presented upon the operating table fully anesthetized with the factor of fear wholly excluded. In addition to general anesthesia the entire operative field was as completely cocainized as if no inhalation anesthesia had been given. The result of this was the "blocking" by the cocaine of all nerve impulses from the operative trauma—hence the central nervous system was protected from trauma and fear.

When efficiently carried out, the operation produces slight if any exacerbation. In very serious cases, the ligation of the poles (Stamm) is done in bed under local anesthesia without the patient's knowledge and only a negligible reaction follows. There is a vast difference between the results of such operations and those from the formal operation in the operating room. Although the immediate operative reaction can be thus excluded, we must still reckon with the inflowing impulses arising from stitches after the cocaine has worn off. The interest for the moment is the establishing of the principle that the discharge of nervous energy in operations upon these volatile cases is caused almost wholly by trauma and fear, and that whether due to trauma alone or to fear alone, or to both, the symptoms are identical.

The whole point in the technique is that the dischargeable energy of the central nervous system is conserved as completely as is the potential energy of the powder magazine that is so arranged that it may be fired by either one of two fuses, when one fuse is hidden (exclusion of fear) and the other is severed between the point of application of the match (cocaine block) and the magazine.

It will be at once apparent that this technique is difficult to carry out in every detail, and that it must be perfectly carried out if success is to be attained. To accomplish this it is necessary to have a specially trained nursing as well as a medical staff. By success is meant that the pulse, respira-

tion, and temperature are unaltered by the operation. In excision of the goitre, although there may be no change in the pulse during the operation, after the cocaine wears off many nerve impulses will flow up to the brain and cause a certain amount of reaction; but in simple ligations there will be but little reaction, regardless of the gravity of the case at the time of operation.

Now, in these apparently hopeless cases the ligation is done in the following manner: For several days the patient while in bed is made familiar with the technique of the operation; in doubtful cases the patient is even given sterile hypodermics in the region of the goitre. The patient is made so familiar with the rehearsal of operation —a very simple affair—that the performance of the ligation itself will not in the least be appreciated as an operation by the patient. A hypodermic of morphine is given an hour prior to operation. The skin, fascia, and other tissue overlying the upper poles of both lobes are cocainized. A transverse incision an inch long is then made through the skin and the fascia. By means of a full-curved Kelly needle, the upper pole of the thyroid is ligated *en masse*, including any other tissue, such as superficial muscle, that may come within the grasp of the ligature, which is tightly tied. A stitch or two closes the skin. The ligation of both poles is done in a few minutes and the patient is not aware of its performance. The mere fact that the technique is carried out in bed is a great aid. Some patients have even left the hospital without realizing that they had had an operation.

The ligation of the artery necessarily includes the nerve supply of the gland, which gains entrance to the gland along the walls of the arteries. There is convincing evidence that the benefits of ligation are due to the break of the nerve connection between the brain and the thyroid rather than to the closure of the arteries. Among other facts which support the nerve hypothesis are the following: In Graves's disease trauma of sensitive nerve tissue of any part of the body causes an increased activity of the thyroid gland. Fear and many other emotions also cause an increased activity of the thyroid. These stimuli can reach the thyroid gland only through the nerve supply. In an active thyroid in the midst of acute Graves's disease, the blood-supply is as rich and the anastomoses are as abundant as in an angioma. The ligation of the superior thyroid arteries modifies only slightly, and for but a few days, the total blood-supply of the gland. This statement is abundantly supported by the findings in the course of operation for lobectomy after ligation of the superior thyroids has been recently performed. In the cases in which ligation of the superior thyroid arteries is followed by marked improvement or cure of the disease, the entire thyroid gland shrinks and loses its pulsation. Were the shrinkage due to the loss of blood-supply alone, then only the part of the gland supplied by the superior thyroid artery would shrink; but the fact is all of the gland shrinks. Then, too, when the disease is arrested by a rest cure, or by any other non-operative means, the thyroid gland shrinks in precisely the same manner as when cure follows the ligation of the artery. We may then fairly conclude that the benefits which follow the ligation of the superior thyroid artery are due, for the most part, to the break of the nerve supply which is inevitable in the course of ligation.

In Graves's disease the thyroid shows a work hyperplasia, and the brain cells show a work exhaustion. In Graves's disease the brain sends a more or less constant flow of stimuli into the thryoid gland. The thyroid responds by an increase of its secretion. This increased secretion of the thyroid causes an increased activity of the brain cells. In this manner the brain and the thyroid reciprocally goad each other, and this deadlock, if not broken, continues until one or the other is worn out. This Crile believes is the explanation of the curious ending one occasionally observes, namely, the sequence of myxedema and Graves's disease. Breaking of the nerve connection between the brain and the thryoid gland renders Graves's disease curable.

No case of Graves's disease is cured by

operation alone, and no case is cured until the thyroid gland and the brain are both restored to the normal. This is best secured by operating in such a manner that there is a maximum excitation of the nervous system and of the thyroid glands; hence no volatile outbursts during or after the operation, and no operative danger, then placing the patient in a rest cure for a month or more, depending upon the severity of the disease. If, on the other hand, the patient after the operation is at once immersed in the environment in which the disease originated, there will be many disappointments. The plan of treatment by a combination of a benign operation, followed by a prolonged rest cure, will restore the patient, in so far as tissues are not already irreparably destroyed, to the bloom of health.

ORIGIN OF URINARY STONE.

GORDON (*American Journal of Dermatology*, May, 1911), writing on the causation of stone, notes that the important point to consider is the cement substance which binds the crystalloids together before they can be voided. The best known of these so-called irreversible colloids are, perhaps, mucinogen and fibrinogen, which, on standing, are transformed into mucin and fibrin and then become incapable of reverting to their original form. Stone crystals embedded in these jelly-like materials, as time goes on, ultimately find themselves in a stringy network, which not only keeps them enmeshed, but also renders them urine proof.

It seems probable that there are several cement materials which have special affinities amongst the normal salts of urine to the exclusion of other salts. The administration of uric acid, in any amount, will not cause urate stone to form; but the administration of adenin, to dogs, does produce it. Adenin is not found normally in the blood, but it occurs intracellularly in the processes of catabolism; oxidized it becomes uric acid. Now if a cell is deficient in power to oxidize its waste to uric acid, it may expel this adenin into the blood, and so stone may result, as in administration of this substance experimentally. This toxin sets up nephritis, and it is this nephritis which we look on as specific to produce an inflammatory exudate containing a cement which will bind uric acid into gravel and ultimately into stone. We are dealing with a specific, chronic, leucomaine poisoning.

Schade made mixed oxalate and phosphate stone by beating up these salts in ox blood. Israel has found iron in oxalate stone, presumably from its blood content, for whatever the external color of oxalates, on section they are the shade of stale blood. It seems not improbable that all oxalates have blood for a matrix. It may be freed by trauma, by external violence, by a stone already formed, or by the passage of oxalate crystals themselves through the renal tubules. It is probably fibrinogen and allied substances in free blood which is the cement, as whipped blood gives no such result with oxalate salts. The frequency of oxalate stone in old age may be due to the hematuria of sclerosed kidneys, most commonly found at this period of life.

Fibrinogen from free blood is probably the sole origin of fibrin calculi. The blood-clot is held back, undergoes fibrinous changes before it can become infiltrated with crystals, and becomes a bleached-out mass of almost horn-like consistency.

The matrix of triple phosphate stone is formed by the action of pathological microörganisms which have also the power of splitting up urea into carbonic acid and ammonia. The slime associated in the minds of us all with ammoniacal urine, which is an inflammatory product, perhaps containing mucinogen, is the cement substance in question. The matrix of calcium carbonate stone and of calcium magnesium phosphate seems to be that of any other stone in which the reaction of the urine will allow it to precipitate. These salts almost always adulterate triple phosphate and calcium oxalate stone; but the author has never seen a pure calcium carbonate or calcium phosphate urinary calculus, and doubts its existence. The matrix of cystin stone he cannot even guess at, unless it is

the product of a toxin somewhat similar in action to adenin.

The practical application of these hypotheses lies in prophylaxis. Catabolism, associated with urate stone for the most part, seems deficient in oxidation power. We may be able to force fuller combustion within the cell itself of its nuclein waste by using a forced draft—physical exercise—to draw in more oxygen through the lungs; and secondly, by the administration of metals capable of carrying oxygen in many combinations, such as iron, arsenic, manganese, and, last but not least, mercury in small doses. Most of us know the power of Donovan's solution to relieve headaches, in what is commonly known as lithemia, which is probably an autointoxication with leucomaines, of which adenin is one. And lastly, alcohol, because of its deoxidizing effect on blood, should be prohibited to people with uratic dyscrasia. For nephritis, once established, the usual measures to prevent overloading the kidneys, such as diet, baths, etc., should be adopted.

To prevent oxalate stone from forming in cases of wound of the urinary tract, abstention from food containing much calcium or oxalic acid is necessary. Remove urate stone before it causes hematuria by wounding its bed. In oxaluria, combined with phosphaturia, in neurasthenic states, administer phosphoric acid. For triple phosphate stone, avoid urealytic infection by curing, when present, gonorrhea; by removing any obstruction to urination; by removing foreign bodies in the urinary tract, whether introduced from without, or of pathologic production, such as urate, or other stone. Secondly, when such infection is present, control it as much as possible with hexamethylentetramin; and lastly, and what is of very considerable importance, when urealytic infection is present, do not administer lime or magnesia, or alkali water, for they may so increase the supply of crystalloid material in the urine that masses of agglutinated triple phosphates, which would otherwise be voided, will grow so rapidly as to attain operable size. To prevent formation of all kinds of stone, abundance of good water is to be recommended. Biochemistry, presumably, is better carried on in dilute media, and stone materials in the urine are more apt to be voided before stone can form.

THE TREATMENT OF SKIN DISEASES BY HYPEREMIA (BIER'S SYSTEM).

SIBLEY (*American Journal of Dermatology*, May, 1911) has formed the opinion that practically all chronic forms of skin diseases are benefited by the hyperemic treatment before applying local remedies. The action of ointments and lotions is considerably facilitated if a local congestion of the part is produced before they are applied. This local hyperemia probably acts in two ways. In the first place, by producing a passive congestion, it increases the blood-supply, and so improves the nutrition of the part, and at the same time encourages the removal of deleterious products by the venous blood. In the second place, this local hyperemia assists in the local action of the drugs when they are afterward applied.

Of the cases so far treated, it would appear that the most satisfactory results have been obtained in psoriasis, especially in some very old-standing cases in which the lesions were very chronic and localized. We so often meet with cases of this complaint of many years' standing, where some very persistent lesions are limited to a small area, such as the knees or elbows, which resist all treatment and which is the class of cases specially benefited by this method.

Some cases of lupus vulgaris have shown rapid improvement—in fact, from some recent observations the hyperemic method showed earlier and much more satisfactory results than the *x*-rays had done. Acne, both diffuse and local, reacted well, but these cases required a considerably greater amount of congestion and more frequently repeated treatments, both general to a large affected area, and afterward local to the individual and more persistent comedones and pustules.

The immediate result of the local treatment is to produce a venous congestion of

the skin, which increases the action of the sudoriferous glands, and gives rise to a varying degree of perspiration. This varies with the nature of the lesion and the degree of hyperemia produced. In some conditions only an almost imperceptible amount of sweating results, perhaps just sufficient to produce a slight haziness on the sides of the cupping-glass without a visible sweat on the skin. In others, such as many eczemas and seborrheas, a profuse perspiration is quickly produced, and after a few minutes the whole part is bathed in sweat. In other cases the ordinary sweat is replaced by a serous exudation. In some instances of non-ulcerated lupus, which as a class perspire very freely under the treatment, a blood-stained serum exuded after a short time, and for this reason the cases require to be very carefully treated and only for very short periods at a time, one minute or so being usually sufficient.

He believes that future research into the different reactions of various skin lesions under hyperemia will be of considerable scientific value in assisting and defining the similarities or differences between some of the less easily distinguished skin diseases. These physiological or pathological reactions of various lesions may not only become a help to the pathologist but also of considerable aid to the diagnosis of some, at present, rather ill-defined and readily confused morbid states.

BEVAN'S LIGATION OF THE CORD FOR UNDESCENDED TESTICLE.

EISING (*American Journal of Surgery*, vol. xxv, No. 5) states that the technique of Bevan for lengthening the cord consists in ligating and severing all structures of the cord, except the vas deferens and its accompanying artery, not only reducing the blood-supply of the testis to a minimum, but also closing off all channels for return flow. The exceedingly good results following this procedure demand an explanation that is not immediately apparent.

The idea that this operation is one of true transplantation is not purely hypothetical, but is based upon the observation of two cases operated upon by the writer after the method of Keetley-Torek, in which he also employed Bevan's procedure of ligating all the structures of the cord, except the vas deferens and its accompanying artery. The second stage of the operation in both patients was done some four months after the primary, and he was immediately impressed by the dense vascularization of the peritesticular adhesions, and at that moment was careful to preserve most of the new blood-supply from the scrotal side.

It seems more than likely that this vascularization was in response to nature's demand and probably accounts for the survival of the organ. If this be true, the paradox of the testicle is explained, and Bevan's operation must be looked upon in the light of a subcutaneous graft.

Eising reports two successful cases. In the same journal Whitaker reports an incarcerated inguinal hernia, associated with an ectopia testis, the testicle being arrested at the internal ring. This case demonstrated that the testicle survived the severing of all structures but the vas and its minute artery; that it could not be brought freely and without tension into its normal place in the scrotum without freeing it, not only from all structures as mentioned by Bevan, but also by severing the numerous delicate perivesical fascicular bands in order to allow the vas to come directly through at the external ring; and that the replaced testicle in a sixteen-year-old boy after three months developed to the size of the testicle of the opposite side.

TONSILLECTOMY.

CROCKETT (*Boston Medical and Surgical Journal*, March 23, 1911) believes that in children the tonsils should be removed in all cases where they are large, non-adherent, and nearly fill the cavity of the pharynx; where they are associated with enlarged glands of the neck in all cases of articular rheumatism, where the tonsils are probably an etiological factor, and in all cases of repeated peritonsillar abscess.

They should not be removed when they are of moderate size, nor should parents be informed that if they are taken away the child will be entirely relieved of difficulty in the head or ear trouble. As to the operation of choice beyond question the whole tonsils should be enucleated and removed as completely as possible. This should be done by blunt dissection rather than sharp dissection. The particular method which the author follows is to incise the tissue between the tonsil and anterior pillar with a right-angle blunt-pointed Leland tonsil knife; a blunt dissector is then passed in this incision and swept up and down, thus separating the tonsil from the anterior pillar. The dissector is then passed over the top of the tonsil, at which point the operator should be careful to remember that the upper level of the tonsil is considerably above that of the velum palati. The dissector is then carried down between the tonsil and posterior pillar, but no traction is made upon the tonsil during this dissection. The Farlow tonsil snare is then threaded with a No. 5 steel wire and passed over the tonsil, the tonsil is seized with a lock vulsellum forceps and drawn well forward free of the pillars, and the snare drawn home either gradually or rapidly.

Crockett states that he has only had three postoperative hemorrhages in the past five years; none fatal. In ordinary cases of simple hypertrophy he considers it unnecessary to remove the base of the tonsil, but a perfect result may be obtained by removing enough of the tonsil to bring it down to a normal size so as not to project beyond the pillars. This may be done either with a snare or punch, or the tonsillotome. The parents should be warned that it is always possible for a child to have an acute infection of the nasal pharynx without any demonstrable amount of tonsillar tissue. Adults should always be told that they are going to have the worst sore throat they ever had in their life for a period of from four days to ten days after the operation. In children this period is usually from three to four days.

Crockett says in regard to enucleation of the tonsils that it is an operation not lightly to be undertaken by everybody and anybody. He knows of two cases of immediate fatal hemorrhage of the throat with death in about two minutes following sharp dissection of the tonsils with a knife; one case of severe hemorrhage in the throat following sharp dissection with scissors and relieved by ligation of the common carotid artery; one case of death from strangulation from inhaled vomited material, the operating physician being unprepared for such an accident, and, therefore, unable to do a tracheotomy; one case of death apparently from anesthesia, possibly a case of enlarged thymus.

There was one case of slow hemorrhage from both tonsils following a sharp dissection, partially checked by the use of the Mikulicz tonsil clamp, but then followed two days later by hemorrhages in the skin and pneumonia with death.

At the Massachusetts Charitable Eye and Ear Infirmary it is stated that during the past year there has been one death from hemorrhage and three cases in which it was necessary to ligate the tonsil pillars for the relief of severe hemorrhage, and two cases in which a secondary hemorrhage was checked by the use of the tonsil clamp. There were also two cases of ether pneumonia, one of which was followed by empyema, acute mastoiditis, acute meningitis, and death. This list of accidents comprises only the cases which have come to his own personal knowledge in consultation or otherwise.

POSTOPERATIVE URINARY INCONTINENCE.

SQUIER (*Medical Record*, May 13, 1911) reports the case of a patient coming to him with a history of having been cut through the median perineal opening because of a supposed contracted ring about the bladder neck. The patient reported that the perineal wound had remained open for five weeks, and thereafter incontinence of urine had developed and had continued for three years. The indications for this operation

had been precipitate ejaculation and pain during coitus. Through the perineal incision the urethra is exposed from the bulb to the bladder. It was found almost directly beneath the skin with practically no muscles interposed. A No. 22 F. catheter was passed into the bladder from the meatus, and a sac about the size of a horse-chestnut, which included the deep urethra, carefully dissected out. This sac was then cut away with the floor of the urethra, exposing the catheter which had been passed into the bladder. The lateral walls of the urethra were united with fine catgut sutures along the under surface of the catheter, thus forming a new floor. The cut edges of the transversus perinei and levator ani muscles were dissected out of the scar tissue in the perineum and united below the urethra by chromic gut sutures, and the perineum closed. Drainage of the bladder was carried out by means of the in-dwelling catheter around which the urethra had been sewn.

The catheter was retained for five days and was then removed, at which time the patient voided urine normally and was free from pain. Two cases of this operation are reported, both entirely successful.

HEMOPHILIA TREATED WITH ANTI-DIPHTHERIC SERUM.

Houg (*Milwaukee Medical Journal*, February, 1911) accepts Hammersten's theory of coagulation to the effect that a proteid of a globulin type called fibrinogen is held in solution by plasma. This proteid, being an end product of the white cells, further disintegrates when withdrawn from the body, forming the nucleoproteids or prothrombin. When calcium salts act on this, we get the fibrin ferment or thrombin. When thrombin comes into contact with the fibrinogen molecule dissolved in the plasma, it splits into two parts—one a globulin of no importance, and the other an insoluble fibrin which entangles the cells in the blood, so essential to clot formation. Hence, according to Hammersten, coagulation depends on:

First, calcium salts to convert prothrombin into thrombin.

Second, fibrin ferment.

Third, fibrinogen in solution.

He had occasion to treat a hemophilic mechanic who suffered from a laceration of a finger, having failed with adrenalin, heat, pressure, and calcium chloride. On the fourth day he gave 200 units of diphtheric antitoxin, and on the next morning 2000 units more, with a stoppage of the hemorrhage within fourteen hours after the first dose.

ACUTE POSTOPERATIVE DILATATION OF THE STOMACH.

Morris (*Boston Medical and Surgical Journal*, April 20, 1911) thus elucidates a case of acute dilatation of the stomach consequent upon a burn of the upper abdomen, and one which resulted fatally. He states that heat transforms some albuminous tissue into toxalbumin. The toxalbumin overstimulated the inhibitory nerves of the stomach until they overcame the influence of the vagus. That gave the dilatation in the case. The toxalbumin intoxicated the chromaffins until their influence overexcited the peaceful hormones, and we had a crazy lot of products filling the stomach. The patient could not stand the effect of intoxicated malefactors snarling up his sympathetic nerves, and he died exhausted.

As to treatment, he advises that the patient be placed upon the abdomen and be inclined a little to the right side, thus compressing the dilated stomach and unkinking the duodenum. The stomach is washed out every hour or two if necessary with a stomach-tube.

A NEW METHOD OF PASSING THE BRONCHOSCOPE.

Johnston (*Maryland Medical Journal*, June, 1911) states that his new method of passing the bronchoscope in the straight position has worked admirably and has proven so easy that the work has become a pleasure. The method is as follows:

The patient is placed on the table with

the head in the normal straight position. A general anesthetic is administered. The modified direct laryngoscope is passed straight down between the incisor teeth, and when the epiglottis comes into view the spatula end of the instrument is hooked behind it. By making slight pressure on the upper teeth the epiglottis and base of the tongue are pulled up and the larynx opened for inspection. A weak solution of cocaine is now applied to the larynx through the tube to prevent reflexes. With the laryngoscope in position, the bronchoscope is passed through it to the vocal cords. With the eye fixed on the end of the smaller tube, a slight twisting motion is used, which sends the bronchoscope between the cords. The breathing is now distinctly tubal in character. The laryngoscope is removed and the head of the patient gently lowered over the end of the table. The examination is now proceded with as in the extended position. In the above procedure the operator stands to the left of the patient and uses the laryngoscope in the left hand. Both direct laryngoscopy and bronchoscopy are easier because the muscles are relaxed.

THE SOURCES OF ERROR IN THE X-RAY DIAGNOSIS OF RENAL CALCULUS.

PANCOAST (*American Journal of Dermatology*, May, 1911) thus classifies the various sources of error:

Obesity. Inadequate preliminary preparation of the patient. Conditions of the abdomen or pelvis which offer shadows of such unusual density as to obscure those of the kidney or of a possible calculus, such as the pregnant uterus, tumors, cysts, or ascites.

Surgical dressings, drainage tubes, etc. The presence of unusual or abnormal conditions or objects which cast shadows that may simulate those of stones in the kidney or upper portion of the ureter: first, those outside the kidney, such as calcified lymph glands, foreign bodies in the intestinal tract, especially the appendix, foreign bodies in the abdominal parietes, irregular areas of calcification in the lower costal cartilages, scar tissue, and moles; and secondly, those within the kidney, such as pyelitis, abscess, or scars.

Misplaced or supernumerary kidneys or ureters. Conditions or objects which may, by their shadows, lead to error or confusion in the diagnosis of calculus in the lower portion of the ureter, such as phleboliths, calcified lymph nodes, and sesamoid bones. Certain anatomic structures, such as in the case of stones obscured by the shadows of the pelvic bones and the lower ribs. The consistency of the calculus. Lack of adequate clinical knowledge of the case on the part of the examiner.

Considering the number and the variety of the factors that may affect the accuracy of the *x*-ray diagnosis, it is almost remarkable that the percentage of error is as low as it is. Fortunately, in the majority of instances, those which are the most frequent sources of trouble may be either largely or entirely overcome if previously recognizable, guarded against if not known beforehand, or recognized and eliminated at the second stage of the examination, the interpretation of the radiograph.

Obesity has in the past been the greatest of the previously recognizable obstacles, but fortunately the improvements made in apparatus, tubes and plates, means of controlling the *x*-ray output, the compression diaphragm, and the recent production of an intensifying screen of practical value, have rendered the examination of any but the very stoutest of individuals one of comparative ease and certainty. The comparatively high percentage of secondary radiation given off by hydrocarbons—and therefore fat—and the resulting loss of detail this entails, is the one difficulty in connection with obese patients that we have so far been unable to overcome satisfactorily. The greatest chance of error in failing to find a stone that is present lies in the combination of obesity and the forms of calculi which have but comparatively slight degrees of density, such as pure uric acid stones. With such a combination, occasional mistakes are bound to occur.

Inadequate preliminary preparation is a factor that frequently leads to errors in interpretation, but is one for which the Roentgenologist is less to blame than the clinician or surgeon, who certainly should realize the great importance of this essential part of the technique. Perhaps patients are now less frequently than formerly referred for examination without previous starvation and thorough evacuation of the bowels, but the latter still continues to be carried out carelessly or inefficiently. The presence of gas in the colon is even more misleading than that of fecal matter, because it is apt to render the outline of the kidney shadow uncertain, and collection of gas around a small fecal mass frequently adds so much contrast to the shadow of the latter as to give it a relative density equal to that of a stone. It might be well to reiterate the fact that pills or tablets should never be the form in which laxatives are administered for this purpose, nor should any drugs be given in these forms for at least twenty-four hours preceding the examination.

The pregnant uterus, tumors, cysts, and ascites are always likely to obscure the shadow of a calculus, and this fact should be borne in mind by both the examiner in rendering his diagnosis and the clinician or the surgeon in accepting it.

Unusual or abnormal objects casting shadows as dense as those of calculi will occasionally present a radiographic appearance so closely simulating that of stone in the kidney or upper portion of the ureter as to mislead any one. It is not uncommon to find such shadows in the radiographs of patients who exhibit typical signs and symptoms of stone, but in whom none is found at operation, as most surgeons can recall. Calcified lymph nodes, fecal concretions, especially in the appendix, foreign bodies elsewhere, and irregular calcifications of the lower costal cartilages, which are common in young, thin women, may all be readily distinguished from renal calculi by means of the stereoscopic examination, with or without catheterization of the ureter. One should be on his guard against possible errors arising from the presence of scar tissue or moles. The distinction between the shadows of stone and those due to pyelitic scars in the kidney, or absence of that organ, is not always an easy one to make, but in the case of abscess a mistake is not often serious, as the treatment is usually the same in either instance.

As the examiner should never feel satisfied unless he is able to obtain the shadow of the kidney, displacement of that organ is not so often a source of error as formerly. A stone in a supernumerary kidney would be a condition likely to confuse any one. Misplaced or supernumerary ureters require the aid of the ureteral catheter for their recognition.

The pelvis is the seat of a host of objects whose shadows may lead to errors in the interpretation of radiographs. Phleboliths in the pelvic veins are so common as to be found in the vast majority of individuals, but their usual positions, size, shape, and arrangement are so characteristic that their shadows are readily distinguishable from those of calculi, as a rule, provided the proper technique is followed. Occasionally, however, there is some difficulty in distinguishing, on the one hand, between them, or calcified lymph nodes or sesamoid bones, and stone, and whenever any such uncertainty exists, an examination should be made with the ureter catheterized. It is never safe to base the interpretation of such shadows upon the fact that the catheter passed at another time has or has not met with some obstruction, but the shadow of the catheter should be on the plate. Even then it is advisable in some instances to make a stereoscopic examination with the catheter in the ureter. One should never overlook the fact that it is possible for a stone to be present without producing a perceptible shadow on the radiograph, because pure uric acid calculi possess such a slight degree of density that they may not produce a distinguishable shadow in any but a thin individual. Fortunately, such stones are comparatively uncommon.

The modern technique of the examination for renal calculus requires some knowledge of the clinical aspect of the case on the part

of the examiner, and the one who refers the case adds to the possibility of error in failing to supply the necessary data.

As a further safeguard against serious mistakes, it is a wise rule to confirm the findings of a positive examination before submitting the patient to an operation for the removal of a stone.

"606" IN SYPHILIS.

McIntosh and Fildes (*Lancet*, March 18, 1911), in an answer to an article by Mr. C. F. Marshall, note that the conclusions with "606" which they feel justified in arriving at are:

On the average, if not invariably, "606" is far superior to mercury in the symptomatic treatment of syphilis.

It is certain in the earlier stages of syphilis, and probable in the later, that courses of "606," applied at properly ascertained times, will prevent the onset of symptoms with far less inconvenience and effect upon the general health than mercury.

"606" will probably be used by the unskilled as subcutaneous or intramuscular injections for the symptomatic treatment of syphilis without danger.

The skilled will use intravenous injections in the hope, not without foundation, of realizing a *therapia sterilisans magna*.

THE OPERATIVE TREATMENT IN CARCINOMA RECTI.

Smith (*British Medical Journal*, May 6, 1911) summarizes 34 cases in which there were eight deaths. Of ten operations performed more than three years 50 per cent of the patients are still alive and well. Smith is opposed to the combined abdominal-perineal operation, regarding it as usually unnecessary and entailing a high death-rate.

As to the technique of the operation the principal method is employed. He finds with the patient in the exaggerated lithotomy position and the mesial incision in the perineum that a better view of the upper part of the pelvis, as far as the sacral promontory, can be got. This facilitates a higher division of the fat and tissues in the mesocolon, and though the Kraske operations resulted in 50 per cent of so-called cures, Smith is sure that the operations of the last two years have been more complete, and ought to show even better results as regards recurrence when the time comes for them to be collected.

The freeing of the pelvic colon is rendered easier. Thus the anus can be kept in the normal position, and experience shows this to be better than the sacral or gluteal anus. The sacral anus, situated directly below the prominent ridge of the lower border of the sacrum, which stands out more after the coccyx has been removed, is on a depressed and uneven surface, and is difficult to manage afterward. Being in a rigid position, where it cannot retract between the folds of the buttock, it is also more liable to accidental leakage if the feces are soft or fluid.

Separation from the prostate is easier by the perineal route, and the early opening of the peritoneal cavity through the recto-vesical pouch in front rather than higher up on the lateral walls makes the later stages easier.

The lateral sacral incision takes longer to heal than the perineal one. After the latter, not infrequently healing practically occurs by first intention. He reckons three weeks as the average time before the patient can get about after the perineal operation, whereas by the sacral method it used to require five.

The perineal position is preferable for the administration of the anesthetic and the prevention of shock.

Some points in the operation may be briefly noted. The exaggerated lithotomy position means elevation of the pelvis until the perineum is horizontal. This is done partly by tilting the table, partly by a large sand-pillow under the lumbar spine. To prevent the patient slipping down the sloping table, padded straps are passed over each shoulder and fastened to the leg supports at the foot of the table.

The rectum is finally washed out before the pelvis is elevated. A long sausage-shaped gauze pad soaked in 1-in-500 bin-

iodide spirit is introduced into the rectum, its end projecting some inches from the anus. A circular incision round the anus is deepened beyond the external sphincter, and the anus, thus separated, is firmly secured to the pad by a double cruciform suture of thick silk, taking a good hold on the sphincter, so that it will not tear away even if some traction is made on the pad. This is, of course, where the anus is to be sacrificed. In some cases the writer has preserved the sphincter, splitting it by a mesial incision fore and aft of the anus, and then dividing the upper end of the anal canal, as advocated by Ball. In one female patient he divided the sphincter once only, posteriorly, but in men there is not sufficient room unless the incision is carried forward in front of the anus to the center of the perineum.

In cases in which the anus is thus saved the reunited sphincter regains some power, but not sufficient to make the anus quite efficient. Its voluntary grip grasps quite perceptibly the examining finger, but will not close the anus completely. In these cases, also, a projecting sharp-edged septum is apt to form above the anus at the line of suture of the pelvic colon with the anal canal, which rather tends to contract the orifice. The patient can, however, easily keep it in order by the occasional introduction of the finger. The author's experience is that the anus with the sphincter preserved is not greatly better than the perineal anus where it has been removed, and, as has been said, he regards the saving of the anus as dangerous except in high growths.

The mesial incision is carried back to the lower part of the sacrum and the coccyx is removed. The mesial raphe formed by the junction of the levatores ani between the anus and the coccyx is divided, and the finger is passed round the rectum on each side above the levators, which are divided by scissors well outside their insertion into the rectal wall. In growths impinging on the anal canal the levators should be divided further away still, near their origin from the white line of the pelvic fascia, and it is also wise to remove some of the ischio-rectal fat surrounding the sphincters.

The rectal fascia immediately deeper than the levators is next divided. It has a very definite horizontal attachment to the front of the sacrum at the level of the third or fourth segment, between the origins of the "rectal stalks" of Professor Elliot Smith. Mr. T. W. Todd made dissections showing this attachment, as little notice is taken of it in anatomical text-books. The fascia holds the rectum in position, and until it is divided the rectum does not begin to come down at all. The fat and tissue can now be cleared from the front of the sacrum, and this should be done rapidly with the fingers as far up as the promontory. A swab is now inserted to check the oozing, and the separation of the rectum from the prostate is proceeded with. This is sometimes rather difficult, and here also the finger is the best dissector. A metal staff should be inserted in the urethra as a guide. The peritoneum is opened through the rectovesical pouch, and its lateral reflections on to the rectum divided with scissors. The lateral connections of the rectum are then gradually separated with the finger. In doing this the superior hemorrhoidal artery is isolated and clamped, and the large lymphatic vessels passing up over the pelvic brim may be defined. These he usually pulls on until they break off, and they thus come away at a higher level than would otherwise be reached. The tissues from the sacral promontory forward toward the colon are thus teased through, bit by bit. This separation is through the lower part of the mesocolon, and results in the freeing of the long loop of the pelvic colon, which then comes down readily, and the rectum will now be found to hang free, well beyond the skin level. This freeing of the colon is imperative for the success of the operation, for otherwise its cut end cannot be united to the skin around the anus without tension. It has been said that the colon, thus brought down, is liable to slough, but he has never seen this happen.

He lays stress on the use of the finger in dissecting out the rectum and tearing

through the mesocolon at the upper limit of the wound. Its use enables one to pass more easily along the fascial planes, which are the true anatomical boundaries of the viscus, and thus insures its being removed completely, with the perirectal tissue and lymphatics intact. Other advantages are the division of the lymph trunks at a higher level, and the avoidance of bleeding.

After the rectum is cut off and removed the divided peritoneum must be sutured to make a new pelvic floor, and it should be stitched to the front of the colon at the proper level, so as to prevent adhesion of the small intestine, which will subsequently occupy the pelvis.

Silkworm-gut sutures, passing deeply, are introduced along the line of incision but not tied. The cut end of the colon is then sutured to the skin on each side of the former anus by a continuous silk suture, taking a good hold of the bowel wall, but not drawn too tightly. The anal circle of sutures is completed in front and behind after the silkworm-gut sutures have been tied. If the sphincter has been preserved its ends must be carefully sutured, in front and behind the anus, by buried catgut stitches. A large drainage tube is inserted posteriorly, passing to the hollow of the sacrum, and a second smaller tube into the perineum in front of the anus.

REVIEWS.

THE REFRACTION AND MOTILITY OF THE EYE. By Ellice M. Alger, M.D. With 380 pages and 122 illustrations. F. A. Davis Co., Philadelphia, 1911.

In the writing of this book the author has had in mind what he conceives to be the requirements of the general practitioner and the embryo ophthalmologist. Very properly, he calls attention to those embryo specialists who undertake postgraduate work without a sufficient amount of preliminary study, and who are dependent upon their instructor for certain elementary knowledge that they could have readily acquired at home. The first two chapters are devoted to optics and a brief and concise description of the anatomy of the eye. In the subsequent chapter the author takes up the various anomalies of refraction and their treatment, citing illustrative cases. In the remaining chapters he deals with the normal motility of the eyes, heterophoria, heterotropia, and ocular paralysis, concluding with chapters on color blindness, field of vision, and the relation of functional eye diseases to general medicine.

Dr. Alger has produced an exceedingly clever and attractive volume; the descriptions of the various tests and examinations are well stated, and sufficient explanation is given to allow the student to grasp the various steps and the reasons for carrying out the procedures described. It is also a pleasure to read in this book the definite opinions of the author frankly expressed. The reviewer is not in accord with some of the opinions expressed in reference to the use of cycloplegics, and in his opinion and experience the paralysis of accommodation resulting from a thorough use of homatropine is invariably longer than two days. On page 108, in speaking of retinoscopy without a cycloplegic the statement appears that "the writer has convinced himself of the usefulness and accuracy of the method when used in connection with other tests;" this is somewhat confusing when it is definitely stated on page 107 that "retinoscopy depends entirely for its accuracy on a complete relaxation of the ciliary muscle."

In conclusion it can be safely stated that Alger has produced a work that will be well received by those for whom it was intended. The presswork is good and the text singularly free from typographical errors. H.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The heat wave seems to be affecting all countries simultaneously. France is apparently as great a sufferer as ourselves, and both Paris and London have been enduring temperatures nearer 100° than 90°. Last week established an absolute record, when a temperature of over 100° was registered at Greenwich, being the hottest ever known in this country since records have been taken. The whole country is suffering from drought and heath fires, and although a record wheat harvest has been secured, nearly everything else has suffered from the lack of rain. The discomforts arising from such weather have been materially increased by the acute unrest in the labor world. Last week London suffered from a wholesale strike of all the transport workers. As a result large supplies of food accumulated at the docks and there was difficulty in procuring ice and fruit and fish. Although at the time of writing the dockers' strike is supposed to be settled, there is still much discontent among the railway men and many other trades, and the prospect is decidedly gloomy. Liverpool is in a state of active riot, and large forces of troops have had to be drafted into the city. Nothing seems to be more infectious than this mania for strikes, and the more concessions are granted the more exorbitant grow the demands of the men. Indeed, some sections have struck without even taking the trouble to formulate their grievances.

The final report of the Tuberculosis Commission has at length been issued after ten years of patient research, and it decides a question which has been actively canvassed for twenty years. Ever since Dr. Koch enunciated his famous theory differentiating human from bovine tuberculosis in 1891, the discussion has gone on, and ten years ago the conflict of evidence led to the appointment of the Royal Commission which has just issued its final report. It was obviously an important matter for the state to decide if Dr. Koch's theory was sound, in which case a number of regulations against diseased meat and impure milk might safely be abolished. The first report of the Commission, issued in 1904, made it clear that the regulations had better be maintained. The Commission's experiments at that stage showed conclusively that human and bovine tuberculosis were not entirely disconnected, and that animals could be infected from man. The converse proposition has now been demonstrated, and the present report definitely states that both intestinal tuberculosis and tuberculosis of the lungs can be transmitted from animals to man. The report points out that the chief danger to health lies in diseased cows' milk and beef, as none of the animals that multiply the human tubercle bacillus are in common use for man's food. On the other hand, there are particular glands of the pig's body which are likely to enter into certain prepared foods which do occasionally yield tubercle bacilli of the human type. The commissioners found that in a number of cases of children who died from tuberculosis of the intestines, the bovine bacillus was alone the cause in nearly half the cases. They recommend that measures should be taken to exclude from the food supply the milk of all recognizably tuberculous cows irrespective of the site of the disease, whether in the udder or in the internal organs. We are glad to see that the President of the Local Government Board is introducing a pure milk bill which will provide for the registration of dairies and dairymen, the inspection of dairies, the prohibition everywhere of the sale of tuberculous milk, and which will also give extended powers to medical officers to take samples. It is also provided that when a dairyman becomes aware, or is made aware, that a cow in his dairy is suffering from tuberculosis or is giving tuberculous milk, he shall not keep the cow or allow it to be

kept in any field or shed with other cows in milk. Heavy penalties will be enforced for any breach of this law.

The National Insurance Bill is dragging its slow way through Parliament. As there is no prospect of getting the bill through all its committee stages by the end of the session, there will be an autumn session in addition, which will be chiefly given up to the discussion of the bill. The Chancellor of the Exchequer is very anxious to get the bill through at once, so that it may come into force next year, but at present the number of amendments is so prodigious that this result does not appear to be a very likely one. As the majority of the amendments come from the ministerial side of the House, they cannot be treated with that scant courtesy which is sometimes meted out to opposition amendments. The labor party are especially severe in their comments, as apparently they do not relish the idea of having to contribute toward their own insurance and think that the state should take the burden entirely off their shoulders. Meanwhile the united front presented by the medical profession has had a good effect, and various concessions have been secured. One of the most important is to the effect that an income limit will be fixed for "club" or "contract" patients, and that this limit will be fixed for each district by the health committees, on which doctors are represented. Another important concession transfers the control of the medical benefits from the friendly societies to the local health committees. This arrangement is of course a considerable victory for the profession, but it has had the effect of rousing the hostility of the friendly societies to the bill, as they consider that it is extremely important that they should retain the control of the medical benefits in their own hands. With so many conflicting interests to reconcile the Chancellor will find his hands full, and it is quite possible that the bill will not find its way to the Statute Book this year. This will probably prove an advantage, as it will give time for free discussion, and the various parties will be able to see more clearly in what measure the provisions of the bill really affect them. The chief outstanding point about which doctors feel bound to fight is the amount of the fee to be paid per patient per annum. This has not yet been settled, but it is probable that instead of a fixed sum a sliding scale will be instituted, so that the fees can be adjusted to the particular needs of the district, and that this adjustment will be in the hands of the local health committees.

We are glad to be able to note that last month the representatives of Oxford and Cambridge were able to hold their own in the great athletic match against the picked men of Harvard and Yale, though they only did so by the narrow margin of one event. So many of our athletic championships have lately gone out of the country that it is quite a relief to find our men on the victorious side, especially after such a finely contested struggle. It was thought that America would make a better showing in the great air race round Great Britain for £10,000, and Mr. Weymann is to be condoled with for his bad luck. The accounts of the tremendous speediness of his aeroplane had aroused high expectations of his victory.

Once more the London University Officers' Training Corps have undergone the annual training under canvas, and a fairly scorching time we had. The medical section was encamped at Oxney Farm, Aldershot, the infantry being at Longmore about three miles away. The heat was terrific, and on the plain there is no shelter; but in spite of this there were no casualties directly attributable to the heat. The contractors reaped a good harvest in the thirst-quenching line, and we were thankful that no strike cut off the supply of ice. Some excitement was produced by a command from headquarters, ordering us to move our camp into an adjoining field. This was done in the course of two hours, much to the astonishment of some of the regular engineers. Fatigue dress was allowed, and on this occasion took the form of shirts and shoes. The local photographer has been doing well out of his prints of this event.

The training finished off with a three days' march under service conditions as to rations, cooking, and bivouacking, which was enjoyed by all. We met the Edinburgh contingent one day and pitched a temporary hospital in conjunction with them, while the lighter side was exemplified by cricket matches against the O. T. C. Infantry, and a cricket match and tug-of-war against a contingent of the R. F. A., who were stationed near us. All of these competitions the medicals won, but it is a way they have in such matters.

PARIS LETTER.

BY M. A. C. TUCKER, M.D., PARIS.

From a professional point of view the coronation ceremonies and festivities have had the unfortunate consequence—as far as the French medical world is concerned—of advancing considerably the annual exodus of the highest and wealthiest class of the clientele. Gentry having abandoned Paris, the well-to-do and other fashionable folks took it for granted that the season was cut short and were only too eager to follow suit, in order to flee from the exceptional heat of the present year. What was really and sadly cut short under the circumstances for the doctors practicing on both sides of the Seine was, through the wholesale flight of their "faithful patients," a dead loss of about fifty per cent out of their average receipts.

Most stringent measures have been adopted here against all dangers of the invasion of infectious diseases such as pest, cholera, etc., and although not a single suspicious case has been detected up to the present moment in France, hotels are visited twice daily as a measure of precaution where travelers hailing from Italy, Egypt, or the Crimea have taken up their quarters. Stations on the border of Italy, and menaced seaports such as Marseilles, are carefully watched and the police authorities are instructed to ask incomers from contaminated countries for all information as to their intended residences, and moreover it is ordered that special railway tickets are to be delivered to them so as to allow a clue as to their ultimate movements.

The following illustrates a somewhat novel way for a medical man to advertise a *spécialité* of his own. The gentleman in question is the head of a very important service in a public hospital. One fine morning, upon entering his customary clinical duties, our professor announces with a radiant face to his student followers that he is expecting from the world-famed Doctor X., of Berlin, a miraculous serum against tuberculosis. "It will be here in a few days and I have no doubt you'll be astounded at its marvelous efficiency." Upon hearing of such a hopeful promise the patients as well as the scholars manifest their joyful expectations. After the expiration of a few days, the sufferers under actual treatment begin to look anxious, but the master bids them to have a little patience ere they are recompensed for it. At last the long-wished-for serum tubes have arrived, and injections are applied according to the consecrated rites. The beneficent results soon begin to be apparent. The master was right, it is wonderful, and Herr Professor X. of Berlin is decidedly one of the greatest geniuses upon the face of the earth! Patients are regularly weighed; their dejections are duly analyzed; their appetite is carefully controlled, as well as the gradual return of their strength; the moribunds of yesterday walk about with the easiest gait and are advancing rapidly toward complete recovery; in fact, they get on so admirably that the tuberculous of the adjacent wards clamor in their turn for the supernatural drug. But judging that these experiments have lasted long enough, the *savant* assembles his pupils in well-closed chambers and there and then confides to his audience that the famous serum is nothing else but a good isotonic serum of Parisian origin and manufacture. Faith and suggestion have worked marvelously—always the *quid divinum*—and the new product is launched into Fortune's ocean. In therapeutics, the manner of dispensing is very often far better than the remedy itself.

The medical profession here is threatened with a plague of a new kind, in the shape of serious encroachments upon their rights and privileges by so-termed philanthropical institutions whose propensities of late have been bent upon constructing "model low rent buildings" for the benefit of the working classes of this capital. These establishments have been conceived and erected upon the best and highest sanitary principles in view of stamping out—as far as possible—all elements of tuberculosis. For that object the benevolent promoters have decided to build "workmen's cities," where all modern comforts can be obtained for next to nothing, including medical advice, which can be got on the premises. Handbills are being distributed broadcast for the purpose of inducing the occupiers to patronize the medical sanctum at fixed hours on certain days of the week, when adults of both sexes and children are respectively attended to medically at the rate of half a franc per consultation.

The aim of the benefactors would be in itself a laudable one if it benefited only the poorer classes of artisans, but this is far from being the case here, it having been stated over and over again that the earnings of the tenants of these model flats average between 4000 and 5000 francs per annum. In the mind of these particular authorities, it appears that where a recompense is demanded for the use of the bath-room, or of the wash-house, it is only fair to charge something toward the medical expenses of the place, the salary of each of the two consulting doctors being nine hundred francs. But the working people who profit by this arrangement consider it under a vastly different light, and take it for granted that for a five-pence piece they are fully paying for their doctoral advice. Now when you consider that the population of these huge "cities" range from one thousand to fifteen hundred members of prosperous workers, is it not conceivable that the interests of the practitioners have been felt to have been gravely injured in different quarters of the town, and that their societies have good reasons to utter the cry of alarm? Their committees are unanimous in finding this state of things highly prejudicial to the Paris medical corps, and are considering two suggestions tending to cope with the evil, and these are either in remonstrating with the administrators of the incriminated establishments in pointing out to them the unfairness of their methods with regard to the medical body, or in inviting their brothers or *confrères* not to light-heartedly injure the interests of the entire profession by deciding to give consultations at such ridiculously reduced rates for the benefit of non-paupers.

On the other hand, it is noteworthy to see how hospitals and other charitable organizations created for alleviating the pains of the *bona-fide* pauper are preyed upon by a mass of unscrupulous and undeserving people. In bygone days the very name of "hospital" was synonymous with shivering terror; nowadays it is quite the reverse. Embellished with all the latest and most refined devices for the comfort of the inmates, with the accompaniments of kind and careful attention, airy wards, excellent fare and all sorts of other dainties, the hospital of today is an attractive rather than a repulsive refuge to the poor, stricken creature. But for similar reasons it finds great favor with a large number of better-off people who prefer to be well treated and attended to during their troubles at the common expense rather than going through an illness at home, with a doctor's bill as a sequel. The outdoor patients of the middle class literally throng these places, where they can procure their necessary medicine and advice free of charge.

The medical and pharmaceutical societies justly think that it is high time to put an end to this scandalous state of things, and efforts will be made to compel one and all in quest of physical, surgical, or chemical assistance to be in possession of an authentic certificate as to the scarcity of their means, which would be the remedy for a plethoric and undesirable raid upon public remedies.